

AIX Version 3.2

Installation Guide



AIX Version 3.2
Installation Guide

Seventh Edition (June 1993)

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Help Information

The software installation process for your system is designed to be simple and trouble free. Using the procedures in this *Installation Guide*, you should have no problem installing the AIX Version 3.2 Base Operating System (BOS) and optional software products. However, if you are uncomfortable performing initial software installation, or if you have a problem once you begin the process, help is available.

Following are some contacts for getting help and reporting various types of system problems.

World Trade Customers

Contact your country's support structure for your system.

United States Domestic Customers

AIX Version 3.2 Installation and Configuration Information

If you purchased your system directly from IBM, contact your local IBM Branch Office or your IBM Authorized Representative.

If you purchased your system from an IBM Business Partner, please contact your IBM Business Partner.

RISC System/6000 Hardware

Contact IBM Hardware Support at 1-800-IBM-SERV.

Software Defects

Contact the IBM Support Center at 1-800-237-5511.

For information about how to generate test cases and system information files that you may be asked to submit to your support center, refer to the section titled "Reporting Software Defects" in "Chapter 21. Recovery Procedures."

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About This Book

This book describes the different ways to install Version 3.2 of the AIX Base Operating System (BOS). This book also describes how to install optional software and service updates, create a network installation server, create a diskless community, mount InfoExplorer, and configure a network.

Note: The information in this book can also be found in the Hypertext Information Base Library. This online documentation is designed for use with the InfoExplorer hypertext retrieval system.

Determining Your Starting Point

In order to determine the proper starting point for the type of installation you want to perform, be sure to go first to the chapter titled "Determining Your Starting Point."

How This Book Is Organized

This book is divided into the following three parts:

Part I — Installation Procedures

Part I presents the procedures for installing BOS, optional software, and service updates.

- Chapter 1. Starting a Preinstalled System for the First Time
- Chapter 2. BOS Installation from CD-ROM, Tape, or Diskette
- Chapter 3. BOS Installation from a System Backup
- Chapter 4. BOS Installation from a Network
- Chapter 5. BOS Installation for Use with a /usr Server
- Chapter 6. Optional Software Installation
- Chapter 7. Service Updates Installation
- Chapter 8. Post-Installation Procedures
- Chapter 9. Creating an Installation Server
- Chapter 10. Diskless System Installation

Part II — Supplementary Procedures

Part II contains procedures for tasks that support the process of installing BOS.

- Chapter 11. Creating BOSboot Diskettes
- Chapter 12. Viewing README Files
- Chapter 13. Mounting the InfoExplorer CD-ROM
- Chapter 14. Network Configuration
- Chapter 15. Backing Up Your System

Part III — Reference Information

Part III includes reference information to help you with the installation procedures.

- Chapter 16. Planning Your Installation
- Chapter 17. Product Information
- Chapter 18. Hardware Basics
- Chapter 19. SMIT Basics
- Chapter 20. System Messages
- Chapter 21. Recovery Procedures
- Chapter 22. Notes
- Appendix A. Optional Software Installation and Update Concepts

A Glossary, Index, and Reader's Comment Form are located at the back of this book.

Highlighting

The following highlighting conventions are used in this book:

| | |
|----------------|---|
| Bold | Identifies commands, key words, files, directories, and other items whose names are predefined by the system. |
| <i>Italics</i> | Identifies parameters whose actual names or values are to be supplied by the user. Italics are also used to <i>emphasize</i> an important word or phrase. |
| Monospace | Identifies information you should actually type, as well as examples of specific data values, examples of text similar to what you might see displayed, examples of portions of program code similar to what you might write as a programmer, and messages from the system. |

Sample Screens

The chapters in this book contain *sample screens*. These screens appear throughout this book so that you can verify that you have reached the correct step. However, the screens may not be identical to what you see on your system. Some of the information on the sample screens will vary according to the particular configuration of your system, but the sample screens should be *similar* to what you see on your computer display.

Corequisite Publications

For information about how to upgrade an AIX system from Version 3.1 to Version 3.2, refer to *Upgrade Utilities Guide for Upgrading AIX Version 3.1.x to Version 3.2*, Order Number SC23-2441.

For information about how to create a backup copy of an AIX Version 3.1 system, refer to *Installation Guide for AIX Version 3*, Order Number SC23-2341-01.

Related Publications

The following publications contain information related to the installation and management of AIX Version 3.2:

- *Hypertext Information Base Library*, Order Number SC23-2163.
(Once BOS is installed, you can install this complete hypertext library from CD-ROM.)
- *System Management Guide*, Order Number SC23-2457.
- *Communication Concepts and Procedures* (two volumes), Order Number GBOF-1524.
- *Commands Reference* (four volumes), Order Number GBOF-1802.
- *Problem Solving Guide and Reference*, Order Number SC23-2204.
- *General Programming Concepts*, Order Number SC23-2205.

Other publications you may find useful are as follows:

- *Documentation Overview*, Order Number SC23-2456.
- *Topic Index and Glossary*, Order Number GC23-2201.
- *System Overview*, Order Number GC23-2406.
- *InfoExplorer User's Guide and Reference*, Order Number SC23-2455.
- *System User's Guide*, Order Number GC23-2377.
- *Quick Reference*, Order Number SA23-2401.

Ordering Additional Copies of This Book

To order additional copies of this book, use Order Number SC23-2341.

To order additional copies of the *Upgrade Utilities Guide for Upgrading AIX Version 3.1.x to Version 3.2* and any applicable Technical Newsletters (TNLs), use Order Number SBOF-1803.

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Determining Your Starting Point

The installation process has been designed to allow a number of different ways to install software. This chapter points you to the chapter in this manual that you should use to begin installing your software.

Note: Before you can install the Base Operating System (BOS) and any optional software, the hardware installation for your system must be complete and all necessary microcode must be installed.

If BOS Version 3.1.x is already installed on your system and you want to install Version 3.2 to upgrade your system, you need to begin the upgrade process by reading the *Upgrade Utilities Guide* that was inserted into "Chapter 22. Notes" of this book. When the *Upgrade Utilities Guide* tells you to return to the *Installation Guide*, return to this page and continue with the first sentence after this box.

If you do not own the BOS Version 3.1.x, the Upgrade Utilities are unnecessary and therefore they were not shipped to you. In this case, you should simply continue your reading with the first sentence after this box.

Answer the following questions until you reach a "Go to" reference. Then go to that chapter and begin installing the software.

Note: Keep in mind that some chapters in this manual are designed to help you if you run into difficulties during the installation procedures. "Chapter 20. System Messages," for example, explains the error messages, and "Chapter 21. Recovery Procedures" describes how to recover from installation failures.

1. A *preinstalled system* comes from the manufacturer with the run-time part of Version 3.2 Base Operating System (BOS) already installed.

Is this a new system that was preinstalled at the factory?

YES: Go directly to "Chapter 1. Starting a Preinstalled System for the First Time."

NO: Go to question 2.

2. A *standard workstation* is a workstation that can boot (start up) by itself. It may or may not be on a network. However, if it is on a network, it does not need the assistance of a server to boot. A *diskless workstation* is a workstation that cannot boot (start up) by itself. It must use a remote server workstation to boot. A diskless workstation may have disk drives installed, but it does not boot from them.

What kind of workstation are you installing?

STANDARD: Go to question 3.

DISKLESS: Go directly to "Chapter 10. Diskless Systems Installation."

3. Is the Version 3.2 Base Operating System (BOS) already installed on your system?

YES: Go to question 6.

NO: Go to question 4.

4. You can install all of the Version 3.2 Base Operating System (BOS), or you can install a portion of the Base Operating System (BOS) and remotely access the **/usr** file system. The **/usr** file system contains common executable software that can be shared across the same architecture. When you install a portion of BOS, only the **/** (root) file system and the information necessary to start the system are installed. The **/usr** file system is not installed.

Do you want to install *all* of BOS on your system or just a *portion* of BOS and use the **/usr** file system from a **/usr** server?

ALL OF BOS: Go to question 5.

PORTION OF BOS: Go to "Chapter 5. BOS Installation for Use with a /usr Server."

5. Is the BOS to be installed a *backup image* (an image that was customer created with the procedures in "Chapter 15. Backing Up Your System")?

YES: Go to "Chapter 3. BOS Installation from a System Backup."

NO: What is the source of the BOS software that you want to install?

CD-ROM, TAPES, or DISKETTES: Go to "Chapter 2. BOS Installation from CD-ROM, Tape, or Diskette."

NETWORK: Go to "Chapter 4. BOS Installation from a Network."

6. Do you want to install optional software products?

YES: Go to "Chapter 6. Optional Software Installation."

NO: Go to question 7.

7. Do you want to install service updates (maintenance levels, enhancements, and fixes)?

YES: Go to "Chapter 7. Service Updates Installation."

NO: This is the end of the "Determining Your Starting Point" question tree. Either you have answered one of the questions incorrectly or the procedure you want to perform is not included in this question tree. You may want to search for the procedure you are looking for in the InfoExplorer article titled "Installation Guide Content List" (also accessed via the "Installation & Maintenance" option through the InfoExplorer "Topic and Task Index"). You can also check the Table of Contents or Index of this manual for a particular procedure.

PREINSTALLED
SYSTEMS

Part I. Installation Procedures

Chapter 1. Starting a Preinstalled System for the First Time

This chapter contains the following sections:

- Introduction to Preinstalled Systems 1-2
- Flow Chart for Starting a Preinstalled System for the First Time 1-3
- Prerequisite Tasks and Conditions 1-4
- Installation Procedure 1-4
- Related Information 1-21

Introduction to Preinstalled Systems

A preinstalled system contains all the software you need to operate and maintain a typical configuration. Your system's hard drive contains the preinstalled software. The backup media (either tape or diskettes) contains all the software you ordered, including both preinstalled and non-preinstalled software.

Some software is always preinstalled. Some is never preinstalled. Some very large options, such as the InfoExplorer databases, are not preinstalled because they are usually shared on a network. Some options, such as the INed editor, are not preinstalled because they are seldom used. The goal is to preserve the largest possible amount of disk space for your applications and data.

The following lists categorize optional software as either always preinstalled or never preinstalled:

Options Always Preinstalled

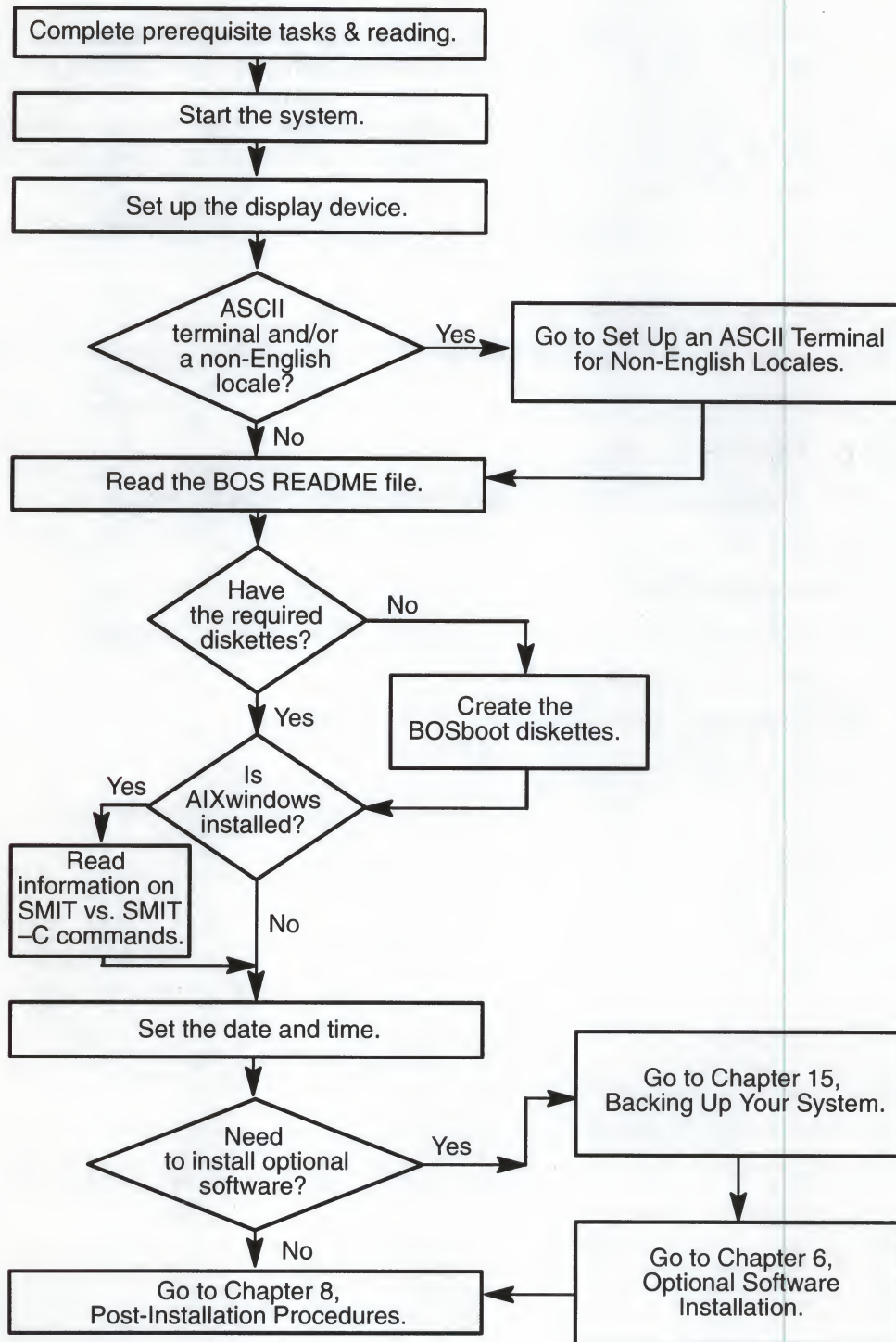
| | |
|--|---------------|
| Base Operating System (BOS) Runtime | (bos.obj) |
| Base Operating System (BOS) Data | (bos.data) |
| Base Application Development Toolkit | (bosadt.all) |
| BOS Extensions 1 | (bosext1.all) |
| BOS Extensions 2 | (bosext2.all) |
| Network Management | (netmgr.all) |
| Base Operating System Network Facilities | (bosnet.all) |
| XL C++ Compiler | (xlc.all) |

Options Never Preinstalled

| | |
|---|----------------|
| Base System Standard Information | (bssiEN_US) |
| Base System Programming Information | (bspieN_US) |
| INed Editor | (INed) |
| Text Formatting Services | (txtfmt) |
| Shared Data Portion of Text Formatting Services | (txtfmt.data) |
| DOS Server | (pci.obj) |
| Enterprise Systems Connection (ESCON) | (escon.obj) |
| AIXwindows Libraries and C Files | (X11dev) |
| AIXwindows Fonts | (X11fnt) |
| AIXwindows Documentation in U.S. English | (X11deviEn_US) |
| AIXwindows Graphics Load Modules | (X11_3d) |
| AIXwindows 3D Documentation in U.S. English | (X11_3diEn_US) |

Flow Chart for Starting a Preinstalled System for the First Time

This flow chart outlines the basic steps you must perform in order to start a preinstalled system for the first time.



Prerequisite Tasks and Conditions

1. All hardware must already be installed, including any external devices, such as tape and CD-ROM drives, and all necessary microcode.
2. You should be familiar with the procedures for operating your hardware. If you are not, read "Chapter 18. Hardware Basics." Then, return here and continue with the next step.
3. In this chapter, you will be using the System Management Interface Tool (SMIT). If you are not familiar with SMIT, read "Chapter 19. SMIT Basics." Then, return here and continue with the next step.
4. Locate the key for the key lock on your system unit.
5. The system unit power is OFF.

Note: It is important that you do *not* turn on the system unit until instructed to do so.

Installation Procedures

This section contains the procedures for the following tasks:

- A. Start the System
- B. Set Up the Display Device
- C. Set Up an ASCII Terminal
- D. Read the BOS README File
- E. Create the BOSboot Diskettes
- F. Set the Date and Time

A. Start the System

PROCEDURE:

1. Turn the system key to the NORMAL position. Do not turn on the system unit until you get to step 4.

2. Turn on all attached external devices, such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit.

Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

3. If you are not using an ASCII terminal, skip to step 4.

If you are using an ASCII terminal, set the terminal's communications options as follows:

- Line Speed (baud rate) = 9600
- Word Length (bits per character) = 8
- Parity = no (none)
- Number of Stop Bits = 1
- Interface = RS-232C (or RS-422A)
- Line Control = IPRTS

It is also recommended that you set the terminal's keyboard and display options as follows:

- Screen = normal
- Row and Column = 24x80
- Scroll = jump
- Auto LF (line feed) = off
- Line Wrap = on
- Forcing Insert = line (or both)
- Tab = field
- Operating Mode = echo
- Turnaround Character = CR
- Enter = return
- Return = new line
- New Line = CR
- Send = page
- Insert Character = space

Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the on-screen instructions to set these options. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set these options. Some non-IBM terminals, however, may have different option names and settings.

4. Turn the system unit power switch to the ON position.

5. A series of codes will immediately appear on the three-digit LED display. On some systems, you may have to flip open a plastic door to see the three-digit LED display. The screen may stay blank for several minutes. Then, `c31` may appear on the three-digit LED display, and each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.

If `c31` is displayed in the three-digit LED display, press the specified keys only on the console that you want to use as your system console.

6. At the login prompt, type the following:

```
root
```

and press Enter.

Your system is now started and you are logged in as the root user.

7. If the preinstalled system does *not* come equipped with AIXwindows, go now to the next section, "B. Set Up the Display Device."

If the preinstalled system includes AIXwindows, use the **xinit** command to activate AIXwindows:

- a. At the command prompt, type the following:

```
xinit
```

and press Enter.

After a few moments, the *aixterm window* appears on your screen.

- b. Use your mouse to move the cursor inside the *aixterm window* and then click the left mouse button one time. This will activate the window so you can begin typing.

Go to section "D. Read the BOS README" on page 1-11.

B. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

PROCEDURE:

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.
2. To see what display name is stored in TERM, type the following:

```
echo $TERM
```

 (note that only TERM should be typed in capital letters.)
and press Enter.
The system responds with the name of the type of display the system thinks you are using.
3. Look at the possible responses to the **echo \$TERM** command to see what you should do next:
If TERM = dumb
The system was unable to automatically recognize your display. You must manually set the display name. Go to step 4.
If TERM = hft
And you are using an hft, such as a model 5081, 6091, or 8508, go to section "D. Read the BOS README" on page 1-11. If you are not using an hft, go to step 4.
If TERM = a specific model number
Such as `ibm3151` and the number is correct, go to the next section, "C. Setting Up an ASCII Terminal" on page 1-9. If the number is wrong, go to step 4.
4. Use the following procedures to manually set the TERM name.
 - a. If you are using a VT100 terminal, your TERM name is `vt100` and you must skip to step d. If you are *not* using a VT100, continue with step b.
 - b. Display names must be typed in a specific format. To see the terminfo list of the valid display names, type the following:

```
ls /usr/share/lib/terminfo/x
```

 (where *x* is the first letter of the name of the manufacturer or type of your display.)
and press Enter.
For example, if you have an IBM display, you would type the following:

```
ls /usr/share/lib/terminfo/i
```

 (where *i* stands for IBM.)
 - c. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether the letters are capitalized. For example, for a model 3151 display, the list will show `ibm3151` as the correct display name.

- d. Type the following:

```
export TERM=xxx
```

(where `xxx` is the exact display name that you copied from the terminfo list.)

and press Enter.

For example, if you are using a 3151, you would type `export TERM=ibm3151` and then press Enter.

5. The `TERM` name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step d every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
basename $(tty)
```

and press Enter.

The screen shows the TTY device name of your display. For example, you might see `tty0` on your screen.

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where `xxx` is the display name you used in step 4d, `zzz` is the tty device name you found in step 5a, the "l" is a lowercase "L," and `term` is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, "C. Setting Up an ASCII Terminal."

C. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments.)

If you are using an hft, such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to section "D. Read the BOS README File" on page 1-11.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE:

1. To see which locale (language) is stored in the LANG variable, type the following:

```
echo $LANG          (where LANG is in capital letters.)
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

| | | | |
|-------|----|-------|-----------------|
| C | | | (POSIX) |
| en_GB | or | En_GB | (Great Britain) |
| en_JP | or | En_JP | (Japan) |
| en_US | or | En_US | (United States) |

YES: The system displayed one of the above locales.

Go to the next section "D. Read the BOS README File" on page 1-11.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo \$LANG** command a *lower* case letter?

YES: It is a *lowercase* letter, go to the next section, "D. Read the BOS README File" on page 1-11.

NO: It is an *uppercase* letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Carefully note how the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see which tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname of the tty device. For example, it may display `/dev/tty0`. The character after `/dev/tty` is the number identifying your tty device.

7. To set the input and output map files, type the following:

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

(where `-l` is a lowercase "L", `x` is the number identifying your tty from step 6, and `mapfile` is the name you wrote down from the `termmap` listing in step 5.)

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "D. Read the BOS README File."

D. Read the BOS README File

A README file is an online document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the installation part of the BOS README file before you continue. The installation part of the README file will list any changes that you should make to the procedures in the rest of this chapter.

As you read the README file, write any corrections into this manual.

PROCEDURE:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

```
/2.Installation (there are no blank spaces in this command)
```

and press Enter.

4. The installation notes appear.

To show the next page Press Enter

To show the previous page Type -1 and press Enter.

Read the notes and write the specified corrections into this manual.

5. When you are finished with the installation section, type the following at the colon (:) prompt:

```
q
```

and press Enter.

The system prompt (#) reappears.

Continue with the next section, "E. Create the BOSboot Diskettes."

E. Create the BOSboot Diskettes

In order to maintain your Version 3.2 Base Operating System (BOS) after it is installed, you will need to create a set of the BOSboot diskettes. This section shows you how to create these diskettes.

Note: If you purchased copies of these diskettes when you ordered your system, you can skip to the section titled "If You Have AIXwindows Installed" on page 1-15.

Note: Special notice for Kanji (Japanese locale) users: You do not need to create these diskettes. Kanji systems use the standard National Language Services diskettes to boot and install the Version 3.2. Kanji users should skip to the section titled, "If You Have AIXwindows Installed" on page 1-15.

The BOSboot diskettes you create will be version-specific. They will only work with a copy of BOS that has the same version number as the BOS you used to create them. The BOSboot diskettes are as follows:

- Boot diskette — This is used to start (boot) your system from your diskette drive in case your system can no longer boot itself from the hard disk.
 - Display diskette — This is used to set up your display device.
 - Install/maintenance diskette — Contains a subset of the system commands that are used to install software and solve system problems.
 - Display Extensions diskette — This is an additional display diskette that is needed *only* if you have one of the following graphics adapters installed in your system:
 - POWER Gt3 Midrange graphics adapter
 - POWER Gt4 Midrange graphics adapter
 - POWER Gt4x Midrange graphics adapter
 - High Speed 3D Graphics Accelerator
 - Any other IBM graphics adapter.
- Note:** To determine if you have the graphics adapters installed on your system, use the `lsdev -Cs mca` command to check your system hardware list or refer to your "About Your Machine" document.
- Communications Extensions diskette — This is an additional diskette that is needed *only* if you have the Fiber Distributed Data Interface (FDDI) software option (**fddi.obj**) and the FDDI microcode option (**fddi.mc**) installed on your system.

PROCEDURE:

1. Depending on your system, take the following steps to format the number of blank diskettes you will need for your BOSboot diskettes:

Note: These diskettes must have a minimum capacity of 1.44 megabytes.
Diskettes with 1.44-megabyte capacity are referred to as "2-megabyte" diskettes.
Diskettes with 2.88-megabyte capacity are referred to as "4-megabyte" diskettes.

- a. At the system prompt, type the following:

```
format
```

and press Enter.

Note: If you are formatting these diskettes on a 2.88-megabyte disk drive, the **format** command formats a "4-megabyte" diskette by default.
To format a "2-megabyte" diskette, enter the following command:

```
format -d /dev/fdx.18    (where x is the number of the 2-megabyte  
                           diskette drive.)
```

- b. When prompted on-screen, insert a blank diskette into the diskette drive and press Enter.
 - c. When the formatting is done the message `Format completed` appears and the system prompt (`#`) reappears. Remove the diskette.
 - d. Repeat steps a through c until all of the diskettes are formatted. Then continue with the next step.
2. To create the BOS Boot diskette, take the following steps:
 - a. Insert a formatted diskette into your diskette drive.
 - b. Type the following

```
bosboot -a -d fd0    (The last character in this command is a zero.)
```
 - c. and then press Enter.
 - d. After a minute, system messages appear on the display as the boot diskette is created.
 - e. When the system prompt (`#`) reappears, remove the diskette from the drive and label it "BOS Boot, Version 3.2." It is very important that you include the version numbers on the labels of these diskettes. These diskettes will only work on a BOS that has the same version number.
 3. To create the BOS Display diskette, take the following steps:
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:

```
mkdispdskt
```

and then press Enter.
 - c. The message `Mount Volume 1 on /dev/rfd0. Press Enter to Continue.` appears. Leave the diskette in the drive and press Enter.
 - d. After a minute, system messages appear. When the system prompt (`#`) reappears, remove the diskette from the drive and label it "BOS Display, Version 3.2."

4. To create the BOS Install/Maintenance diskette and, if necessary, the Communications Extensions diskette, take the following steps:

a. Insert a formatted diskette into the diskette drive.

b. Type the following:

```
mkinstdskt
```

and press Enter.

c. Depending on whether you are prompted to create a second Install/Maintenance diskette, do one of the following:

- If you are *not* prompted to create a second Install/Maintenance diskette, remove the diskette from the drive and label it "BOS Install/Maintenance, Version 3.2." Skip to step d.
- If you *are* prompted to create a second Install/Maintenance diskette, the following message is displayed:

```
Please mount Volume 2 on /dev/rfd0
```

If this message appears on your screen, do the following:

- Remove the first diskette from the drive and label it "BOS Install/Maintenance, Version 3.2 – Vol. 1."
- Insert another formatted diskette into the diskette drive and press Enter.
- When the second Install/Maintenance diskette is finished, remove it from the drive and label it "BOS Install/Maintenance, Version 3.2 – Vol. 2."

d. Depending on whether you have the FDDI software (**fddi.obj** and **fddi.mc**) installed on your system, do one of the following:

- If you do *not* have the FDDI software installed on your system, skip to step 5.
- If you *do* have the FDDI software installed on your system, the following message is displayed:

```
Insert a Formatted Diskette for the Communications  
Extensions... then press Enter
```

If this message appears on your screen, do the following:

- Insert a formatted diskette into the diskette drive and press Enter.
- When the system prompt reappears, remove the diskette from the drive and label it "BOS Communications Extensions, Version 3.2."

5. If you have a graphics adapter that requires the Display Extensions diskette, take the following steps and create one. If you do *not* need this diskette, go to step 6.
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:

```
mkextdskt
```


and then press Enter.
 - c. The message `Mount Volume 1 on /dev/rfd0. Press Enter to Continue.` appears. Leave the diskette in the drive and press Enter.
 - d. After a minute, system messages appear. When the system prompt (`#`) reappears, remove the diskette from the drive and label it "BOS Display Extensions, Version 3.2."
6. Write-protect all of the diskettes that you have created by sliding the write-protect tab to the open position.

You have finished creating the BOSboot diskettes. Depending on your system, do one of the following:

- If you do *not* have AIXwindows installed on your system, skip to "F. Set the Date and Time" on page 1-16.
- If AIXwindows is installed on your system, read the next section, "If You Have AIXwindows Installed."

If You Have AIXwindows Installed

There are two versions of SMIT – an ASCII (text only) version and a Motif (graphical) version. If you are using an ASCII terminal, only ASCII SMIT can be used. If you have a graphical terminal and AIXwindows is installed, both ASCII and Motif SMIT are available. Since not all users have Motif SMIT, all of the instructions in this manual are written for use with ASCII SMIT.

When it is time to start SMIT, the instructions will tell you to type `smit`. However, if you are working inside AIXwindows, you should type `smit -C` instead of `smit`. This way you will get ASCII SMIT instead of the Motif SMIT that normally appears when you are using AIXwindows. As a result, your screen menus will match the menus in this manual.

Now, continue on to the next section, "Set the Date and Time" on page 1-16.

F. Set the Date and Time

PROCEDURE:

1. At the system prompt (#), type the following:

date

and press Enter.

The system displays the date and time.

Note: Time on your system is expressed in terms of a 24-hour clock, often called "military time." In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, you have completed this procedure.
- To change the date and time, go to step 2.

2. Type the following:

smit startup (or type smit -C startup if you are working in AIXwindows)

and press Enter.

A screen similar to the following displays:

SYSTEM STARTUP MENU

Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

Backup the System
System Environments
Install / Update Software
TCP/IP
NFS

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Select **System Environments** and press Enter.
A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change Number of Virtual Terminals at Next System Restart
Change / Show Date, Time, and Time Zone
Change / Show Characteristics of Operating System
Manage Language Environment
Change Number of Licensed Users

4. Select **Change / Show Date, Time, and Time Zone** and press Enter.
A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Select the System Keyboard Map
Assign the Console
Change / Show Date, Time, and Time Zone
Change Language Environment
Change Number of Licensed Users

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

Does this time zone go on
DAYLIGHT SAVINGS TIME?

1 yes
2 no

| | | |
|----------|------------|-----------|
| F1=Help | F2=Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to *yes* and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to *no* and press Enter.

A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

| | | |
|-------------|----------------------------|----------|
| [TOP] | | |
| (CUT0GDT) | Coordinated Universal Time | (CUT) |
| (TZ 1DT1) | Azores; Cape Verde | (CUT -1) |
| (TZ 2DT2) | Falkland Islands | (CUT -2) |
| (TZ 3DT3) | Greenland; East Brazil | (CUT -3) |
| (AST4ADT) | Central Brazil | (CUT -4) |
| (EST5EDT) | Eastern U.S.; Columbia | (CUT -5) |
| (CST6CDT) | Central U.S.; Honduras | (CUT -6) |
| [MORE...12] | | |

F1=Help
F8=Image
F2=Refresh
F10=Exit
F3=Cancel
Enter=Do

6. Move the cursor to highlight your time zone and press Enter. Use the up and down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following displays:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|--|---------------------------|
| Old time zone | [Entry Fields] CST6CDT |
| Time Zone | CST6CDT |
| Does this time zone go on daylight savings time? | yes |
| * YEAR (00-99) | [91] |
| * MONTH (01-12) | [04] |
| * DAY (01-31) | [15] |
| * HOUR (00-23) | [11] |
| * MINUTES (00-59) | [32] |
| * SECONDS (00-59) | [05] |

F1 = Help
F5 = Undo
F9 = Shell
F2 = Refresh
F6 = Command
F10=Exit
F3 = Cancel
F7=Edit
Enter=Do
F4 = List
F8 = Image

7. Move the cursor to the entry fields you want to change, and type the new information for each field. Do *not* press Enter until you have finished making changes.

Note: Remember that you must use the 24-hour clock format for the HOUR field.

When you press Enter, a screen similar to the following displays:

| COMMAND STATUS | | | |
|--|-------------|------------|------------|
| Command: OK | stdout: yes | stderr: no | |
| Before completion, additional instructions may appear below | | | |
| Mon Apr 15 11:32:05 CST 1991 | | | |
| Now exit SMIT and log out and then back in so that any changes to date, time, and time zone will be reflected in your current session. | | | |
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

8. Press F10 to exit SMIT.

- If you changed the time zone, go to step 9.
- If you did *not* change the time zone, you have finished setting the date and time.

9. After changing the time zone, you must log off of the system and then log back in so that the new time zone can take effect.

Use the following procedure to log off and then log back into the system:

- If you are *not* using the AIXwindows Environment, go to step b. If you *are* using the AIXwindows Environment, hold down the left Ctrl key and the Alt key, and press the Backspace key. This takes you out of AIXwindows and displays the command line. It is normal for the system to display error messages after leaving AIXwindows. Continue with step b.
- At the system prompt, type the following:
`exit`
and press Enter to log out.
- The login prompt is displayed. Log back into the system by typing the following:
`root`
and then press Enter.

Where Do I Go Next?

If you want to install any additional optional software, go to “Chapter 6. Optional Software Installation.”

If you do *not* need to install any additional optional software, go to “Chapter 8. Post-Installation Procedures.”

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **ls** command, **smit** command, and **tar** command.

The Backup Overview in *System Management Guide* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *System Management Guide* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *System Management Guide* provides information on mounting files and directories, mount points, and automatic mounts.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

NOTES

BOS INSTALLATION

Chapter 2. BOS Installation from CD-ROM, Tape, or Diskette

This chapter contains the procedures for installing the Version 3.2 of the AIX Base Operating System (BOS) from CD-ROM, tape, or diskette.

This chapter includes the following sections:

- Choosing between a New Installation, a Preservation Installation, and a Complete Overwrite Installation 2-2
- Flow Chart for BOS Installation from CD-ROM, Tape, or Diskette 2-3
- Prerequisite Tasks and Conditions 2-4
- The Installation Procedure 2-6
- Advanced Path 2-40
- Related Information 2-44

Choosing between a New Installation, a Preservation Installation, and a Complete Overwrite Installation

There are three different methods for installing the Base Operating System (BOS): New Installation, Preservation Installation, and Complete Overwrite Installation. The instructions are combined in one procedure because the three types of installation are very similar. The differences in the procedures will be pointed out where they occur.

A *volume group* is one disk or a group of hard disks on your system. A *root volume group* is a group of hard disks in which the root portion of BOS is stored. This means that a root volume group can be used to boot (start up) your system. It is possible to have multiple root volume groups, but only one is necessary.

1. *New Installation* is performed when the hard disk or disks you are installing BOS onto are *empty*. A hard disk is empty if it does not contain any data or if it contains some data, but it does not contain a root volume group (it is not bootable).
2. *Preservation Installation* installs the Version 3.2 BOS and preserves the existing root volume group on your system. This method only overwrites the `/usr` (`/usr`), temporary (`/tmp`), `/var`, and root (`/`) file systems of the previously installed version. Use this installation procedure when a previous version of BOS is installed on your system and you want to preserve the root volume group, including your system configuration.

A Preservation Installation will automatically preserve only some of the data on your system (some of the contents of the root volume group). It will still be necessary for you to use the Upgrade Utilities (if you are installing over Version 3.1.x) or the System Management Interface Tool (SMIT) to finish restoring all of your system data.

3. *Complete Overwrite Installation* is used when a previous version of BOS is installed on your system, and you want to completely overwrite the existing version of BOS. This procedure may impair recovery of data or destroy all existing data on your hard drives.

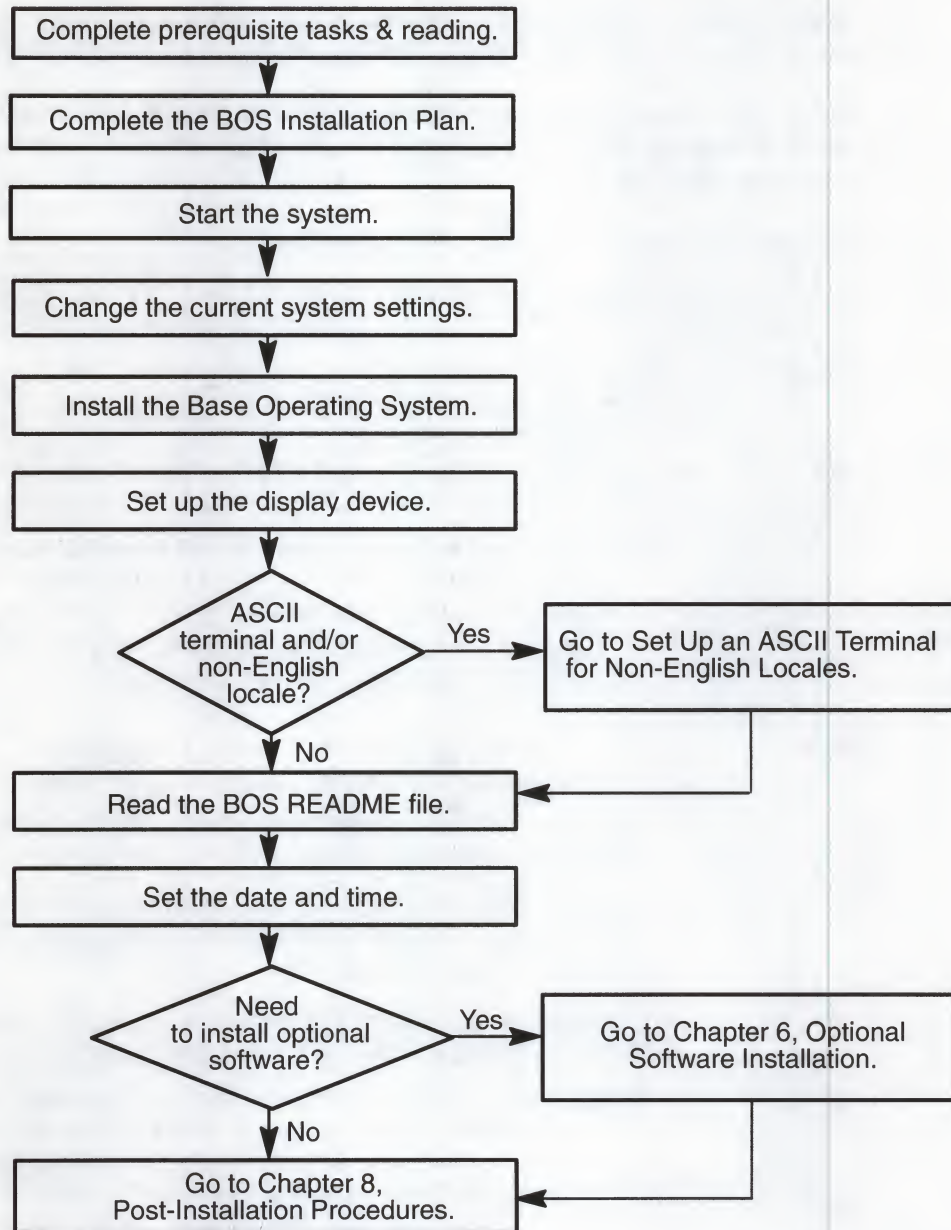
Use the Complete Overwrite Installation when:

- You want to install onto hard disks that contain an existing root volume group, but you want to completely overwrite the root volume group. For example, this might occur if your root volume group has become corrupted.
- You want to reassign your hard disks. For example, you have four hard disks and they all belong to one root volume group. You want to separate the disks into two volume groups. First do a Complete Overwrite Installation and select the first two disks as the installation destination. These two disks become the root volume group. You then use SMIT to combine the remaining two disks into a second (nonroot) volume group. The result is two separate volume groups. All of the operating system files are in the root volume group and you can store user data in the second volume group. When the operating system is updated or reinstalled, the user's data is unaffected.

Warning: The Complete Overwrite procedure overwrites the selected destination disks. This means that after the installation is complete, you will have to manually configure your system using SMIT or the command line. If you want to preserve your system configuration and you do *not* need to completely overwrite your root volume group, do *not* use Complete Overwrite. Instead, use the Preservation Install procedure described in this article.

Flow Chart for BOS Installation from CD-ROM, Tape, or Diskette

This flow chart outlines the basic steps you must perform in order to install BOS Version 3.2 from CD-ROM, tape, or diskette.



Prerequisite Tasks and Conditions

1. All hardware must already be installed, including any external devices, such as tape and CD-ROM drives, and all necessary microcode.
2. You should be familiar with the procedures for operating your hardware. If you are not, read "Chapter 18. Hardware Basics." Then, return here and continue with the next step.
3. In this chapter, you will be using the System Management Interface Tool (SMIT). If you are not familiar with SMIT, read "Chapter 19. SMIT Basics." Then, return here and continue with the next step.
4. Locate the key for the key lock on your system unit.
5. Locate your installation media.

CD-ROM Do the following only if you are installing from CD-ROM:
Find the AIX/6000 Version 3.2 BOS CD-ROM.

Tape Do the following only if you are installing from tape:
Find the AIX/6000 Version 3.2 BOS tapes.

Note: If you boot from diskette and install from tape, the C-POSIX locale (language) will be automatically installed for you. For instructions on how to install a different locale (language) *after* you have installed the Base Operating System (BOS), refer to "Chapter 6. Optional Software Installation."

Diskette Do the following only if you are installing from diskettes.
Find the following AIX/6000 Version 3.2 BOS diskettes:

- BOS Boot, Display, Install/Maintenance, and, if appropriate, BOS Display Extensions diskettes.
- A series of diskettes beginning with BOS 1, a diskette labeled *bsmLanguage*, and a diskette labeled *bslLanguage*, where *Language* is your preferred language.
- If you are using a non-IBM display adapter card, be sure that you have the display diskette from that manufacturer.

Note: If you are not sure whether you have a display adapter installed, consult the "About Your Machine" document that was shipped with your system. It contains a list of the factory hardware shipped with your system.

6. Depending on the type of installation you are performing, do one of the following:
 - If you are performing a New Installation (installing AIX 3.2 for the first time), refer to the documentation that accompanied the new product installation media and read the section titled "Information for New AIX 3.2 Customers." When you are finished, go to the next section, "Installation Procedure."

- If you are performing a Preservation Installation or a Complete Overwrite Installation, we strongly recommend that you locate or create a backup of your system before you begin the installation. For information about how to create a backup of a BOS Version 3.2 system, go to "Chapter 15. Backing Up Your System." After you have created a backup of your system, go to the next section, "Installation Procedure."
- If your system currently has AIX Version 3.1 installed and you used the Upgrade Utilities to create a backup copy (as described in the *Upgrade Utilities Guide*), you do not need to make another backup. In this case, skip to the next section, "Installation Procedure," and continue.
- If AIX Version 3.1 is currently installed and you did not use the Upgrade Utilities to upgrade your system, refer to the *Installation Guide for Version 3* for instructions on how to create a backup copy of your Version 3.1 system. Also, if you have not already created your BOSboot diskettes for your Version 3.1 system, refer to the same publication for information about how to create these diskettes. When you are finished, go to the next section, "Installation Procedure."

Installation Procedure

This section contains instructions for the following:

- A. Complete the BOS Installation Plan
- B. Start the System
- C. New or Complete Overwrite: Change the Current System Settings
- D. Preservation: Change the Current System Settings
- E. Install the Version 3.2 Base Operating System (BOS)
- F. Set up the Display Device
- G. Setting Up an ASCII Terminal
- H. Read the BOS README File
- I. Set the Date and Time
- J. BOS Installation Completion Tasks.

Continue with the next section when you are ready to begin the installation.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin with the next section, "A. Complete the BOS Installation Plan." This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of BOS and only need a minimal set of instructions, you can skip to page 22 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin in the next section.

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning Your Installation" and complete the BOS Installation Plan. Then, return here and continue with the next section, "B. Start the System."

B. Start the System

PROCEDURE:

1. If your system is turned OFF, skip to step 2.
If your system is already turned ON, use the following procedure to shut it down:

- a. If you are not already logged in as root, do so now.
- b. Type the following:

```
shutdown
```

and press Enter.

The shutdown process is complete when the following message is displayed:

```
Halt completed ...
```

Note: On some models (such as the RISC System/6000 580, 950, 970, and 980), the **shutdown** command turns off the power to the system unit. It does not, however, automatically flip the power switch to the OFF position.

- c. When the shutdown process is complete, flip the system unit power switch to the OFF position. Do not turn your system unit back on until you get to step 5.

Note: If the **shutdown** command turned off the system unit, you still need to flip the power switch to the OFF position.

2. Depending on the system unit, do one of the following:

- If your system is a RISC System/6000 model 580, 950, 970, or 980, turn the system key to the SERVICE position.
- If your system is *not* one of these models, turn the system key to the SECURE position.

3. Turn on all attached external devices, such as terminals, CD-ROM drives, tape drives, monitors, and external disk drives.

Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

4. If you are not using an ASCII terminal, skip to step 5.

If you are using an ASCII terminal, set the terminal's communications options as follows:

- Line Speed (baud rate) = 9600
- Word Length (bits per character) = 8
- Parity = no (none)
- Number of Stop Bits = 1
- Interface = RS-232C (or RS-422A)
- Line Control = IPRTS

It is also recommended that you set the terminal's keyboard and display options as follows:

- Screen = normal
- Row and Column = 24x80
- Scroll = jump
- Auto LF (line feed) = off
- Line Wrap = on
- Forcing Insert = line (or both)
- Tab = field
- Operating Mode = echo
- Turnaround Character = CR
- Enter = return
- Return = new line
- New Line = CR
- Send = page
- Insert Character = space

Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the on-screen instructions to set these options. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set these options. Please note that some non-IBM terminals may have different option names and settings than those listed here.

5. Flip the system unit power switch to the ON position.
6. Depending on the system unit, do one of the following:
- If your system is not a RISC System/6000 model 580, 950, 970, or 980, skip to step 7.
 - If your system is a RISC System/6000 model 580, 950, 970, or 980, do the following:
 - a. Wait three seconds.
 - b. Turn the system key to the SECURE position.
7. After several minutes, the 200 code will appear on the three-digit LED display on the system unit.

Note: On some systems, you may have to flip open a plastic door to see the three-digit LED display.

8. Depending on your installation media, do one of the following:

- | | |
|----------|---|
| CD-ROM | Insert the AIX/6000 Version 3.2 BOS CD-ROM into a disc caddy and insert the caddy into your CD-ROM drive. Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it. |
| Tape | Insert the AIX/6000 Version 3.2 BOS tape into your tape drive. Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens. |
| Diskette | Insert the AIX/6000 Version 3.2 BOS Boot diskette into the diskette drive. Note: Make sure that the BOS Boot diskette has the same version number as your AIX/6000 Version 3.2 BOS diskettes. |

9. If the system key is not already turned to the SERVICE position, turn it to the SERVICE position now.

10. Press the yellow system RESET button twice in quick succession.

Note: On some systems, a Main Menu or Select Language screen may appear. If the Main Menu appears, follow the on-screen instructions to select the **Exit Main Menu & Start System (boot)** option. If the Select Language screen appears, follow the on-screen instructions to return to the Main Menu and select the **Exit Main Menu & Start System (boot)** option.

11. Your system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.

- | | |
|----------|--|
| CD-ROM | If you are installing from CD-ROM, go to step 14. |
| Tape | If you are installing from tape, go to step 14. |
| Diskette | If your system has one of the following display adapters installed, go to step 12. Otherwise, go to step 13. |

Note: If you ordered an adapter with your system, the adapter name will be listed on your "About Your Machine" document as one of the following:

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any other IBM graphics adapter.

If your system does not have one of the above adapters installed, go to step 13.

12. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).

Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette from the drive and insert the BOS Display diskette.

Continue with step 14.

13. When the c07 code appears on your three-digit LED system display, remove the diskette from the drive and insert the BOS Display diskette.

Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 14.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

14. The screen may stay blank for several minutes. Then, c31 will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.

Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

Press the specified keys only on the console that you want to use as your system console.

| | |
|----------|----------------|
| CD-ROM | Go to step 16. |
| Tape | Go to step 16. |
| Diskette | Go to step 15. |

15. A message similar to the following displays:

Insert BOS Install/Maint Diskette and Press Enter

When you see this message, remove the Display diskette, insert the BOS Install/Maintenance diskette, and press Enter.

Note: Depending on your system, you may be prompted for Volume 2 of the Install/Maintenance diskette. If you are, remove Volume 1 from the diskette drive, insert Volume 2, and press Enter.

16. A series of messages is displayed. This may take several minutes.

Note: If you are booting from tape, it is normal for the system to move the tape back and forth during this period.

A screen similar to the following displays:

AIX 3.2 INSTALLATION AND MAINTENANCE

Select the number of the task you want to perform.

>>> 1 Install AIX
2 Install a system that was created with the SMIT "Back Up the System" function or the "mksysb" command.
3 Install this system for use with a "/usr" server.
4 Start a limited function maintenance shell.

Type the number for your selection, then press "Enter": 1

Note: The >>> (arrows) on this menu indicate the default selection. During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right shift key.

CD-ROM Continue with step 17.

Tape Continue with step 17.

Diskette Remove the BOS Install/Maintenance diskette from the diskette drive.
Then continue with step 17.

17. Press Enter to select **Install AIX**.

18. If you are doing a New Installation, go to section "C. New or Complete Overwrite: Change the Current System Settings" on page 2-13.

If you are doing a Preservation or Complete Overwrite Installation, a screen similar to the following displays:

| |
|--|
| <p style="text-align: center;">METHOD OF INSTALL</p> <p>Select the number of the type of Installation you want to perform:</p> <p>1 PRESERVATION INSTALL Preserves SOME of the data on the destination hard disk. Only overwrites the user (/usr), temporary (tmp), and root (/) file systems of the previously installed version of AIX.</p> <p>2 COMPLETE OVERWRITE INSTALL May overwrite EVERYTHING on the destination hard disk. – If the destination disk is totally empty, select 2. – If AIX is already installed on the destination hard disk but there is nothing on the disk you want to preserve, select 2.</p> <p>99 Return to previous menu</p> <p>Type the number for your selection, then press Enter: 1</p> |
|--|

19. Select the method of install that you want to use by typing the appropriate number and then press Enter. The Current System Settings screen will then appear.

Depending on the type of install you have selected, do one of the following:

- If you are doing a Preservation Install go to section "D. Preservation: Change the Current System Settings" on page 2-19.
- If you are doing a Complete Overwrite Install, go to section "C. New or Complete Overwrite: Change the Current System Settings" on page 2-13.

C. New or Complete Overwrite: Change the Current System Settings

Note: Do *not* select **0** on the following Current Systems Settings screen until after you have read all of the instructions in section C.

A screen similar to the following displays:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter.

| | CURRENT CHOICE |
|---|------------------------|
| 1 LOCALE (language) | C (POSIX) |
| 2 INPUT Installation Device | 150 mb Tape: /dev/rmt0 |
| 3 DESTINATION Disks | 00-01-00-00 |
| 4 STARTUP (Boot) Device | 00-01-00-00 |
| 99 Return to previous menu | |
| 0 Install the AIX base operating system with the current settings | |

Type the number for your selection, then press Enter: 0

Warning: When updating from AIX Version 3.1.x to 3.2.x, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the procedures if you need to change the settings.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure. If you do not need to change the locale, go to the next section, "Input Installation Device" on page 2-15.

PROCEDURE:

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following displays:

CHANGE LOCALE

Select the number for the language/locale.

>>> 1 C (POSIX)

2 Danish

3 Dutch (Belgium)

4 Dutch

5 English (UK)

6 English (US)

7 Finnish

8 French (Belgium)

9 French (Canada)

10 French (France)

11 French (Switzerland)

12 German (Switzerland)

13 German

14 Greek

15 Icelandic

16 Italian

17 Japanese

18 Norwegian

19 Portuguese

20 Spanish

21 Swedish

22 Turkish

99 Return to previous menu

Type the number for your selection then press ENTER: 1

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

| | |
|----------|---|
| CD-ROM | If the language you select as the locale is on the CD-ROM, it will be automatically installed during installation. |
| Tape | If you specified your primary language when you ordered your AIX/6000 Version 3.2 software, it was loaded on your tape at the factory. If the language you selected for locale is on your tape, it will be automatically installed during installation. |
| Diskette | If you are installing from diskette, you will be prompted to insert the language and messages diskettes at the end of installation. The system will then automatically install the locale you specify on the Current System Settings screen. |

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Note: Changes to the locale (language) do not take effect until after BOS is installed and your system is rebooted. The Latin-1 countries (U. S., Canada, western Europe) and Japan are supported by two code sets. The default code set is the same code set that you were using in AIX Version 3.1.x. After software installation is completed, users who want to change their language environment or code set should consult the following articles:

- "Understanding Locale" in the *System Management Guide*.
- "How to Change Your Locale" in the *System Management Guide*.
- "Understanding Code Set Strategy" in the *Kernel Extensions and Device Support Programming Concepts*.

During optional software installation, make sure you select any additional locales (languages) that you want to install.

Go to the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.

Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device continue with the following procedure. If you do not need to change the input installation device, go to the next section, "Destination Disk."

PROCEDURE:

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following displays:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|-----------|---------------|
| 1 | Diskette: | /dev/fd0 | 00-00-0D-00 |
| 2 | 8mm Tape: | /dev/rmt0 | 00-08-00-30 |
| >>> 3 | CD-ROM: | /dev/cd0 | 00-08-00-40 |
| 4 | Token-Ring: | /dev/tr0 | 00-00 |
| 5 | Token-Ring: | /dev/tr1 | 00-01 |
| 6 | Standard Ethernet: | /dev/en0 | 00-02 |
| 7 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 8 | Standard Ethernet | /dev/en1 | 00-03: |
| 9 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. Type the number for the device supplying the software you want to install and press Enter.
3. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Destination Disk."

Destination Disk

This section describes how to change the hard disk or disks where the Base Operating System (BOS) will be installed. The location codes of the hard disks are displayed on the CHANGE DESTINATION HARD DISK(S) screen in the LOCATION column. The format for the location code for a direct-attached disk is: AA-BB where AA is 00 (zero) and BB is the slot number for the hard disk. The format for the location codes for all other hard disks is described in the section titled "Vital Product Data and Location Codes" in the *POWERstation and POWERserver Common Diagnostics and Service Guide*.

Warning: It is extremely important that you install to the correct destination since all of the existing data on the destination disk will be destroyed.

If you need to change the destination disk or disks, continue with the following procedure. If you do not need to change the destination disk, go to the next section, "Startup (Boot) Device."

PROCEDURE:

1. To select **DESTINATION Disks** from the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following displays:

| CHANGE DESTINATION HARD DISK(S) | | | | | |
|--|---|-------------|-----|------------------|-----|
| Select the Destination Hard Disks. At least one bootable disk must be selected. If necessary, more than one hard disk may be selected. To cancel a selection, enter the number a second time. Current selection is indicated by >>>. | | | | | |
| >>> | 1 | 00-07-00-00 | 320 | 00014099342d572c | Yes |
| >>> | 2 | 00-07-00-10 | 320 | 00014099342d572c | No |
| | | | | | |
| 99 Return to previous menu | | | | | |
| 0 Commit current selection and return to Settings Menu | | | | | |
| Type the number for your selection, then press Enter: 0 | | | | | |

Note: On the Change Destination Hard Disk(s) screen, the greater-than signs (>>>) indicate that the first seven disks in the listing have been preselected for you. You must deselect any preselected hard disks that you do not want to use as a destination disk.

2. To select or deselect a hard disk, type the disk's menu number and press Enter.
 - If the disk was previously selected, the greater-than signs (>>>) disappear from the menu indicating that the disk has been deselected.
 - If the disk was previously not selected, the greater-than signs (>>>) appear to the left of the disk indicating that it is now selected.
3. Continue selecting and deselecting hard disks as required. You can select multiple hard disks as the destination of the AIX Base Operating System (BOS). When you are finished, go to the next step.
4. When you have finished selecting and deselecting the destination hard disks, type the following:
0
and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Startup (Boot) Disk."

Startup (Boot) Disk

This section describes how to select the hard disk within the group of destination disks that will contain the startup (boot) image. This is the hard disk that will be used to start your system after BOS is successfully installed and you reboot the system.

PROCEDURE:

1. To select **STARTUP (Boot) Disk** at the Current System Settings menu, type the following:

4

and press Enter.

A screen similar to the following displays:

CHANGE STARTUP DISK

Choose the ID# of the startup (boot) disk.

STARTUP DISK

>>> 1 00-01-00-00

99 Return to previous menu

Type the number for your selection, then press ENTER: 0

2. Type the number for the disk on which you want your startup (boot) image to reside, and press Enter.
3. When you have finished, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to section "E. Install the Base Operating System" on page 2-23.

D. Preservation: Change the Current System Settings

Note: Do *not* select 0 on the Current Systems Settings screen until after you have read all of the instructions in this section.

A screen similar to the following displays:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct, type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter.

| | | |
|----|---|------------------------|
| 1 | LOCALE (language) | CURRENT CHOICE |
| 2 | INPUT Installation Device | C (POSIX) |
| 3 | DESTINATION root VG | 150 mb Tape: /dev/rmt0 |
| | | 00-01-00-00 |
| 99 | Return to previous menu | |
| 0 | Install the AIX base operating system with the current settings | |

Type the number for your selection, then press Enter: 0

Warning: When updating from AIX Version 3.1.x to 3.2.x, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the procedures if you need to change the settings.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure. If you do not need to change the locale, go to the next section, "Input Installation Device," on page 2-21.

PROCEDURE:

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following displays:

CHANGE LOCALE

Select the number for the language/locale.

>>> 1 C (POSIX)

2 Chinese (Taiwan)

3 Danish

4 Dutch (Belgium)

5 Dutch

6 English (UK)

7 English (US)

8 Finnish

9 French (Belgium)

10 French (Canada)

11 French (Switzerland)

12 French (France)

13 German (Switzerland)

14 German

15 Greek

16 Icelandic

17 Italian

18 Japanese

19 Korean

20 Norwegian

21 Portuguese

22 Spanish

23 Swedish

24 Turkish (qwerty keyboard)

25 Turkish (fggiod keyboard)

99 Return to previous menu

Type the number for your selection then press ENTER: 1

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

| | |
|----------|---|
| CD-ROM | If the language you select as the locale is on the CD-ROM, it will be automatically installed during installation. |
| Tape | If you specified your primary language when you ordered your AIX/6000 Version 3.2 software, it was loaded on your tape at the factory. If the language you selected for locale is on your tape, it will be automatically installed during installation. |
| Diskette | If you are installing from diskette, you will be prompted to insert the language and messages diskettes at the end of installation. The system will then automatically install the locale you specify on the Current System Settings screen. |

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Note: Changes to the locale (language) do not take effect until after BOS is installed and your system is rebooted. The Latin-1 countries (U. S., Canada, western Europe) and Japan are supported by two code sets. The default code set is the same code set that you were using in Version 3.1.x. After software installation is completed, users who want to change their language environment or code set should consult the following articles:

- "Understanding Locale" in the *System Management Guide*.
- "How to Change Your Locale" in the *System Management Guide*.
- "Understanding Code Set Strategy" in the *Kernel Extensions and Device Support Programming Concepts*.

During optional software installation, make sure you select for installation any additional locales (languages) that you want to install.

Go to the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.

Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device, continue with the following procedure. If you do not need to change the input installation device, go to the next section, "Destination Root Volume Group."

PROCEDURE:

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following displays:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|-----------|---------------|
| 1 | Diskette: | /dev/fd0 | 00-00-0D-00 |
| 2 | 8mm Tape: | /dev/rmt0 | 00-08-00-30 |
| >>> 3 | CD-ROM: | /dev/cd0 | 00-08-00-40 |
| 4 | Token-Ring: | /dev/tr0 | 00-00 |
| 5 | Token-Ring: | /dev/tr1 | 00-01 |
| 6 | Standard Ethernet: | /dev/en0 | 00-02 |
| 7 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 8 | Standard Ethernet | /dev/en1 | 00-03: |
| 9 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. Type the number for the device supplying the software you want to install and press Enter.
3. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Destination Root Volume Group."

Destination Root Volume Group

This setting specifies the hard disk or disks where you want BOS to be installed. A volume group is a single hard disk or a group of hard disks. A root volume group is a group of hard disks that contains boot files so that it can be used to start (boot) the system. It is possible to have more than one root volume group on your system. This procedure describes how to select the root volume group that will be the destination for the new version of BOS that you are installing.

Warning: It is extremely important that you select the correct root volume group since some of the existing data in the destination root volume group will be destroyed during BOS install.

PROCEDURE:

1. To select **DESTINATION root VG** from the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following displays:

CHANGE DESTINATION ROOT VOLUME GROUP

Select the number of the Destination Root Volume Group (RVG).

|< —————hard disks in group—————>|

| ROOT VOLUME GROUP | LOCATION | SZ | LOCATION | SZ | LOCATION | SZ |
|--------------------|-------------|-----|----------|----|----------|----|
| 1. 000000088158089 | 00-01-00-00 | 320 | | | | |
| 2. 000000077122013 | 00-01-00-10 | 320 | | | | |

99 Return to previous menu

Type the number(s) for your selection, then press ENTER: 1

2. Consult your BOS Installation Worksheet for the identification number of your destination root volume group. Type the menu number for the destination root volume group and press Enter. For example, to select **ROOT VOLUME GROUP 000000088158089**, as shown in the example screen, you would type 1 and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "E. Install the Base Operating System."

E. Install the Base Operating System

When you have finished setting all of the values on the Current System Settings menu, you can instruct the system to begin installing the Base Operating System (BOS).

PROCEDURE:

1. To select **Install the AIX Base Operating System with the current settings** at the Current System Settings menu, type the following:

0

and press Enter.

Note: The appearance of the next screen will vary according to the type of install you are doing. However, you should use the following procedures for all versions of this screen.

For example, if you are doing a Preservation Installation, a screen similar to the following displays:

FINAL WARNING

Select the number of the desired action

Base Operating System installation will destroy or impair recovery of all data in the usr (/usr), temporary (/tmp), and root file systems of the selected root volume group.

- 99 Return to Previous Menu
- 0 Continue with Install

Type the number for your selection, then press ENTER

2. To begin installing the system, type the following:

0

and press Enter.

Note: The screen will not immediately change after you press Enter.

- If within a few seconds you see a `Device is not ready` message, go to step 3.
- If this message does *not* occur, go to step 4.

3. The wrong input device was probably selected. If this error occurs, you *must* return to step 8 in section "B. Start the System" on page 2-7 and repeat the install procedure.

4. Do one of the following:

- | | |
|----------|---------------|
| CD-ROM | Go to step 6. |
| Tape | Go to step 6. |
| Diskette | Go to step 5. |

5. A message similar to the following will appear:

Please insert the first BOS diskette
and press Enter to continue ...

Remove the BOS Install/Maintenance diskette and insert the first BOS diskette and press Enter. Continue with step 6.

6. As the system begins installing BOS (which will take a while), system messages will be displayed as the following activities occur:

- File systems are created.
- Files are restored.

CD-ROM **Note:** When the following screen appears, continue with step 7.

Tape **Note:** When the following screen appears, continue with step 7.

Diskette **Note:** As the installation process continues, a message similar to the following may be displayed when it is time to insert another diskette:

pax: Ready for volume 2.
pax: Type "go" when ready to proceed (or
"quit" to abort):

a. Insert the next diskette, type the following:

go
and press Enter.

Continue inserting diskettes when prompted.

b. When the following screen appears (this will take a while), go to step 7.

AIX Base Operating System installation is complete.

Please perform the following three steps to activate the changes made during this installation.

1. Make sure your installation media (tape, diskette, CD1-ROM, etc.) has been removed from the input device.
2. Turn the system key to the NORMAL position.
3. Press the ENTER key to restart (reboot) the system.

Note: There are two error messages that may be displayed during BOS installation that you can ignore. The messages state that no software products were found and that no valid products were left to process. These messages are a normal part of the install process and are not indicative of any errors.

7. Remove the CD-ROM, tape, or diskette from the drive.

CD-ROM

Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it.

Tape

Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

8. Turn the System key to the NORMAL position.
9. Press Enter to shutdown and reboot the system. System messages will appear as the system goes through the shutdown process. As the system reboots, the screen may go blank for a few minutes.

Note: If you are doing a Preservation Install, the system may do a shutdown and a second boot to complete all of your locale changes.

When the system completes the boot (startup) process, a login prompt is displayed on your console.

10. To log in to the system as root, type the following:

```
root
```

and press Enter.

A system prompt (#) appears.

Your Base Operating System is now installed.

Note: Although a message may appear on the screen instructing you to read the README files, it is not necessary to read those files now.

Go to the next section, "F. Set Up the Display Device."

F. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

PROCEDURE:

1. Determine the model number for your display.

Note: If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.

2. To see which display name is stored in TERM, type the following:

```
echo $TERM (type TERM all in capital letters)
```

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

3. Look at the possible responses to **echo \$TERM** command to see what you should do next:

If TERM = dumb

This means that the system was unable to automatically recognize your display. You must manually set the display name. Go to step 4.

If TERM = hft

And you are using an hft such as a model 5081, 6091, or 8508, then go to the section "H. Read the BOS README File" on page 2-33. If you are not using an hft, go to step 4.

If TERM = a specific model number

Such as `ibm3151` and the number is correct, go to "G. Setting Up an ASCII Terminal" on page 2-32. If the number is wrong, go to step 4.

4. Search the list below and see if your terminal type is in the list.

| | | | |
|---------|---------|-------|-------------|
| hft | ibm5550 | vt100 | wyse60-316X |
| ibm3151 | ibm5570 | vt220 | wyse60-316X |
| ibm3163 | | vt320 | |
| ibm3164 | | vt330 | |

If your terminal type is listed above, write down the name precisely as it appears in the list then go to step 7.

If your terminal type is not listed above, go to step 5.

5. Since your terminal was not in the list above, you need to install an additional terminal information file.

a. Insert the AIX/6000 Version 3.2 BOS CD-ROM, tape, or diskette into the appropriate drive.

b. To determine the logical name of your drive, do the following:

CD-ROM If you are installing from CD-ROM, type:
`lsdev -Cc cdrom`

Tape If you are installing from tape, type:
`lsdev -Cc tape`

Diskette If you are installing from diskette, type:
`lsdev -Cc diskette`

and press Enter.

The available drives are then displayed. The first word in each line is the drive name.

c. Write down the name of the drive where you inserted the CD-ROM, tape, or diskette.

d. To install the additional terminal information (contained in **bos.data**), do the following:

CD-ROM If you are installing from CD-ROM, type:
(where *name* is the device name you noted in step 5c.)
`installp -qaX -d /dev/name bos.data`

Tape If you are installing from tape, type:
(where *name* is the device name you noted in step 5c and the ".1"
after the device name specifies the no-rewind mode.)
`installp -qaX -d /dev/name.1 bos.data`

Diskette If you are installing from diskette, type:
(where *name* is the device name you noted in step 5c.)
`installp -qaX -d /dev/name bos.data`

and press Enter.

e. After the installation is finished, an installp summary is displayed. If **bos.data** was installed correctly, the Event column will show **APPLY** and the Result column will show **SUCCESS**.

6. Display names must be typed in a specific format.

- a. To see the terminfo list of the valid display names, type the following:
(where *x* is the first letter [not capitalized] of the name of the manufacturer or type of your display. For example, if you have an IBM display, you would type:

```
ls /usr/share/lib/terminfo/i where i stands for IBM.)
```

```
ls /usr/share/lib/terminfo/x
```

and press Enter.

- b. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether the letters are capitalized. For example, for a model 3151 display, the list will show *ibm3151* as the correct display name.

7. Type the following:

```
export TERM=xxx
```

(where *xxx* is the exact display name that you copied from the terminfo list. For example, if you are using a 3151, you would type: `export TERM=ibm3151` and then press Enter.)

and press Enter.

8. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 7 every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second `/` are the device name. In this example, it is *tty0* (where the last character in this example is a zero, not the letter "o").

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where *xxx* is the display name you used in step 7 and *zzz* is the tty device name you found in step 8a.

Note: The `-l` in this command is a lowercase "L" and that *term* is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with *tty0* changed.

Your terminal should now be set correctly. Continue with the next section, "G. Setting Up an ASCII Terminal."

G. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments).

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the next section, "H. Read the BOS README File," on page 2-32.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE:

1. To see which locale (language) is stored in the LANG variable, type the following:

```
echo $LANG (LANG is in capital letters.)
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

| | | | |
|-------|----|-------|-----------------|
| C | | | (POSIX) |
| en_GB | or | En_GB | (Great Britain) |
| en_JP | or | En_JP | (Japan) |
| en_US | or | En_US | (United States) |

YES: The system displayed one of the above locales, go to the next section "H. Read the BOS README File" on page 2-32.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo \$LANG** command a *lowercase* letter?

YES: It is a *lowercase* letter, go to the next section, "H. Read the BOS README File," on page 2-32.

NO: It is an *uppercase* letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Make careful note on whether the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see which tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname of the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` are the numbers identifying your tty device.

7. To set the input and output map files, type the following:
(where `-l` is a lowercase "L", `x` is the number identifying your tty from step 6, and `mapfile` is the name you wrote down from the `termmap` listing in step 5.)

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "H. Read the BOS README File."

H. Read the BOS README File

A README file is an online document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software.

Note: It is important that you read the installation part of the BOS README file before you continue.

The following procedures contain instructions for viewing the BOS README file. As you read the README file, write down any corrections to these installation procedures.

PROCEDURE:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

```
/2.Installation
```

and press Enter.

Note: There are no blank spaces in this command.

4. The installation notes appear.

To show the next page, press Enter.

To show the previous page, type -1 and press Enter.

Read the notes and write down any corrections to these installation procedures.

5. When you are finished with the installation part of the BOS README file, type the following at the colon (:) prompt:

```
q
```

and press Enter.

The system prompt (#) reappears.

Continue with the next section, "I. Set the Date and Time."

I. Set the Date and Time

PROCEDURE:

1. At the system prompt (#), type the following:

date

and press Enter.

The system displays the date and time.

Note: Time on your system is expressed in terms of a 24-hour clock, often called "military time." In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to the next section, "J. BOS Installation Completion Tasks" on page 2-37.
- To change the date and time, go to step 2.

2. Type the following:

smit startup (or smit -C startup if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

SYSTEM STARTUP MENU

Your AIX Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

Backup the System
System Environments
Install / Update Software
TCP/IP
NFS

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Select **System Environments** and press Enter. A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change Number of Virtual Terminals at Next System Restart
Change / Show Date, Time, and Time Zone
Change / Show Characteristics of Operating System
Manage Language Environment
Change Number of Licensed Users

4. Select **Change / Show Date, Time, and Time Zone** and press Enter. A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change / Show Date, Time, and Time Zone
Change Language Environment
Change Number of Licensed Users

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

Does this time zone go on
DAYLIGHT SAVINGS TIME?

1 yes
2 no

F1=Help
F8=ImageF2=Refresh
F10=ExitF3=Cancel
Enter=Do

5. You have the following choices:

- If your time zone uses daylight savings time, move the cursor to **yes** and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to **no** and press Enter.

A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

[TOP]

| | | |
|-------------|----------------------------|----------|
| (CUT0GDT) | Coordinated Universal Time | (CUT) |
| (TZ 1DT1) | Azures; Cape Verde | (CUT -1) |
| (TZ 2DT2) | Falkland Islands | (CUT -2) |
| (TZ 3DT3) | Greenland; East Brazil | (CUT -3) |
| (AST4ADT) | Central Brazil | (CUT -4) |
| (EST5EDT) | Eastern U.S.; Columbia | (CUT -5) |
| (CST6CDT) | Central U.S.; Honduras | (CUT -6) |
| [MORE...12] | | |

F1=Help
F8=Image
F2=Refresh
F10=Exit
F3=Cancel
Enter=Do

6. Move the cursor to highlight your time zone and press Enter. Use the Up and Down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following displays:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|--|---------------------------|
| Old time zone | [Entry Fields] CST6CDT |
| Time Zone | CST6CDT |
| Does this time zone go on daylight savings time? | yes |
| * YEAR (00-99) | [91] |
| * MONTH (01-12) | [04] |
| * DAY (01-31) | [15] |
| * HOUR (00-23) | [11] |
| * MINUTES (00-59) | [32] |
| * SECONDS (00-59) | [05] |

F1 = Help
F5 = Undo
F9 =Shell
F2 = Refresh
F6 = Command
F10=Exit
F3 = Cancel
F7=Edit
Enter=Do
F4 = List
F8 = Image

7. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following displays:

| COMMAND STATUS | | | |
|--|-------------|------------|------------|
| Command: OK | stdout: yes | stderr: no | |
| Before completion, additional instructions may appear below. | | | |
| Mon Apr 15 11:32:05 CST 1991 | | | |
| Now exit SMIT and log out and then back in so that any changes to date, time, and time zone will be reflected in your current session. | | | |
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

8. Press F10 to exit SMIT.

- If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Go to step 9.
- If you did *not* change the time zone, you have finished setting the date and time. Go to the next section, "J. BOS Installation Completion Tasks" on page 2-37.

9. Use the following procedure to log off the system:

At the system prompt, type the following:

`exit`

and press Enter.

The login prompt is displayed. Continue with step 10.

10. To log back into the system, type the following:

`root`

and press Enter.

You have finished setting the date and time. Continue with the next section, "J. BOS Installation Completion Tasks."

J. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION

Go to procedure "Preservation Installation: Restoring the `/etc/filesystems` File."

COMPLETE OVERWRITE

Go to procedure "Complete Overwrite Installation: Importing Any Nonroot Volume Groups" on page 2-38.

NEW

Go to "Where Do I Go Next?" on page 2-39.

Preservation Installation: Restoring the `/etc/filesystems` File

If you are using the "Upgrade Utilities" to restore your configuration, skip this procedure and go to "Restoring Your SNA Configuration" on page 2-39.

If you are *not* using the "Upgrade Utilities," you need to perform the following procedure.

The preservation installation process saves your old `/etc/filesystems` file into a file called `/etc/filesystems.old`. This file contains information on your file system's mount points and attributes. You must now copy this data back into the `/etc/filesystems` file and create the mount points for all the journaled file systems.

This procedure describes how to restore your `/etc/filesystems` file, create the directory mount points, and mount the directories.

PROCEDURE:

1. Type the following:

```
cd /etc
```

and press Enter.

2. To create the mount points for all journaled file systems known to the system, type the following:

```
lsvg -o | xargs imfs
```

and press Enter.

3. To copy the old **filesystem** file, type the following:

```
cp filesystems.old filesystems
```

and press Enter.

4. To list the NFS file systems in the `/etc/filesystems` file, type the following:

```
lsfs -v nfs
```

and press Enter.

5. For *each* directory in the listing, type the following:

```
mkdir -p MountPoint
```

(where *MountPoint* is the name of each directory in the Mount Pt column.)

and press Enter.

6. To list the CD-ROM file systems in the `/etc/filesystems` file, type the following:

```
lsfs -v cdrfs
```


and press Enter.
7. For *each* directory in the listing, type the following:

```
mkdir -p MountPoint
```

 (where *MountPoint* is the name of each directory in the Mount Pt column.)

and press Enter.
8. If you want to mount any journaled file systems now, use the **smit mountfs** command.
You have finished restoring your `/etc/filesystems` file. Go to "Where Do I Go Next?" on page 2-39.

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to "Restoring Your SNA Configuration" on page 2-39.

If you have any nonroot volume groups, perform the following procedure.

This procedure is used to make any nonroot volume group hard drives known to your system. If this procedure is not done you will not be able to access your nonroot volume hard drives.

This procedure describes how to import a nonroot volume group and mount the file systems.

PROCEDURE:

1. Type the following:

```
smit importvg
```

 (or `smit -C importvg` if you are working in AIXwindows.)
and press Enter.
2. **VOLUME GROUP** name is highlighted.
Type the name you want to call this volume group.
3. Move the cursor to **PHYSICAL VOLUME** name.
Press F4 to list the available physical volumes.

A list of physical volumes should be displayed.
4. Move the cursor to select the physical volume you want to import.
Press Enter.
5. Press Enter again to begin command execution.
6. A Command Status screen appears.
When the `Command: status` indicator changes to `OK`, press F10 to exit SMIT.
7. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished importing your volume groups. Go to the next procedure, "Restoring Your SNA Configuration" on page 2-39.

Restoring Your SNA Configuration

If you are *not* using the "Upgrade Utilities" to upgrade from AIX Version 3.1 to Version 3.2, go to the next section, "Where Do I Go Next?."

If SNA was *not* already installed on your system when you began to install BOS, go to the next section, "Where Do I Go Next?."

If you are *not* going to install SNA, go to the next section, "Where Do I Go Next?."

This procedure will restore the SNA configuration information that you saved using the "Upgrade Utilities."

PROCEDURE:

1. Type the following:

```
cd /
```

and press Enter.

2. Insert the backup image labeled "Configuration File for rsconf" into your tape or diskette drive.

3. To restore the SNA migration file, type the following:
(where *name* is the name of your tape or diskette drive.)

```
restore -xqvf /dev/name ./tmp/.SNA_migration
```

and press Enter.

You have finished restoring your SNA configuration. Continue to the next section, "Where Do I Go Next?."

Where Do I Go Next?

If you need to install optional software, go to "Chapter 6. Optional Software Installation."

If you do *not* need to install optional software, go to "Chapter 8. Post-Installation Procedures."

Advanced Path

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning Your Installation" and complete the BOS Installation Plan.

B. Start the System

1. If the system is turned OFF, skip to step 2.
If the system is turned ON, use the **shutdown** command to shut it down.
2. If the system is a RISC System/6000 model 580, 950, 970, or 980, turn the system key to the SERVICE position.
If the system is *not* one of these models, turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.
4. If you are using an ASCII terminal, set the communications, keyboard, and display options as described in step 4 on page 2-8.
5. Flip the system unit power switch to the ON position.
Note: On some models (such as the RISC System/6000 model 580, 950, 970, and 980), the **shutdown** command turns off the system unit but it does not automatically flip the power switch to the OFF position. In this case, flip the power switch to the OFF position and then back to the ON position.
6. If the system is a RISC System/6000 model 580, 950, 970, or 980, wait three seconds and then turn the system key to the SECURE position.
If the system is *not* one of these models, continue with the next step.
7. After several minutes, the 200 code will appear on the three-digit LED display.
8. Insert the BOS CD-ROM, first BOS tape, or BOS Boot diskette.
9. If the system key is not already turned to the SERVICE position, turn it to the SERVICE position now.
10. Press the yellow system RESET button twice in quick succession.
11. If you are installing from CD-ROM or tape, go to step 14.
12. When c07 appears on the three-digit LED display, insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
13. When c07 appears the second time, insert the BOS Display diskette.
14. When c31 appears on the three-digit LED display, select the device that you want to use as your console.
15. If you are installing from diskettes, insert the BOS Installation/Maintenance diskette.
16. At the 3.2 INSTALLATION AND MAINTENANCE screen, select item 1.

17. What type of installation are you performing?

PRESERVATION

At the METHODS OF INSTALL screen, enter 1. Then go to section "D. Preservation: Change the Current System Settings."

COMPLETE OVERWRITE

At the METHODS OF INSTALL screen, enter 2. Then go to section "C. New or Complete Overwrite: Change the Current System Settings."

NEW

Go to section "C. New or Complete Overwrite: Change the Current System Settings."

C. New or Complete Overwrite: Change the Current System Settings

1. To change the LOCALE (Language), enter 1 and choose the locale (language).
2. To change the INPUT Installation Device, enter 2 and choose the correct installation device.
3. To change the DESTINATION Disks, enter 3 and choose your destination disks.
4. To change the STARTUP (Boot) Disk, enter 4 and choose your startup disk.

D. Preservation: Change the Current System Settings

1. To change the LOCALE (Language), enter 1 and choose the correct locale (language).
2. To change the INPUT Installation Device, enter 2 and choose the correct installation device.
3. To change the DESTINATION root VG, enter 3 and choose the correct destination Root VG.

E. Start the Installation Process

1. From the Current System Settings screen, enter 0 to begin the installation.
2. From the FINAL WARNING screen, enter 0 to start the installation.
3. What is your installation media?

| | |
|-----------|---|
| CD-ROM | Insert the CD-ROM if prompted. |
| TAPE | Insert each tape if prompted. |
| DISKETTES | Insert the first SMIT "mksysb" backup diskette. Continue to insert each diskette when prompted. |
4. When the reboot screen appears, do the following:
 - a. Remove the CD-ROM, tape, or diskette from the drive.
 - b. Turn the system key to the NORMAL position.
 - c. Press Enter to reboot the system.
5. After the system reboots, log in to the system as root.

F. Set Up the Display Device

1. If you are using an HFT, skip to section "H. Read the BOS README File."
2. Enter `export TERM=xxx` where `xxx` is your display name.
3. Enter `chdev -a term=xxx -l zzz` where `xxx` is your display name and `zzz` is the tty device you are using.

G. Setting Up an ASCII Terminal

If you are using a non-English Locale (Language), do the following:

1. Enter `ls /etc/nls/termmap` to list the available input and output map files.
2. Enter `setmaps -t mapfile` where `mapfile` is from the termmap listing.
3. Enter `chdev -l ttyzzz -a imap=mapfile -a omap=mapfile` where `zzz` is the tty device you are using and `mapfile` is from the termmap listing.

H. Read the BOS README File

To read the installation information in the BOS README file, type the following:
`pg /usr/lpp/bos/README` and press Enter.

I. Set the Date and Time

1. Enter `date` to check the system date.
2. If the date is not correct, execute the `smit chtz` command to change the date.

J. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION

Go to "Preservation Installation: Restoring the /etc/filesystems File."

COMPLETE OVERWRITE

Go to "Complete Overwrite Installation: Importing Any Nonroot Volume Groups."

NEW

Go to "Where Do I Go Next?"

Preservation Installation: Restoring the /etc/filesystems File

If you are using the Upgrade Utilities to restore your configuration, skip this procedure and go to "Restoring Your SNA Configuration" on page 2-43. If you are not using the Upgrade Utilities, continue with step 1 of the following procedure.

1. Enter `lsvg -o | xargs imfs` to create the mount points for all journaled file systems known to the system.
2. Enter `cp /etc/filesystems.old /etc/filesystems` at the system prompt.
3. Enter `lsfs -v nfs` to list the NFS file systems in the `/etc/filesystems` file.
4. For *each* directory in the listing, enter `mkdir -p MountPoint` where `MountPoint` is the name of each directory in the Mount Pt column.

5. Enter `lsfs -v cdrfs` to list the CD-ROM file systems in the `/etc/filesystems` file.
6. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
7. Execute `smit mountfs` to mount any journaled file systems.
8. Go to "Where Do I Go Next?".

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to "Restoring Your SNA Configuration."

1. Execute the **smit importvg** command to import and varyon any nonroot volume groups.
2. Execute the **smit mountfs** command to mount any journaled file systems.
3. Go to the next section, "Restoring Your SNA Configuration."

Restoring Your SNA Configuration

If you are *not* using the "Upgrade Utilities," go to the next section, "Where Do I Go Next?"

If SNA was *not* already installed on your system when you began to install BOS, go to the next section, "Where Do I Go Next?"

If you are *not* going to install SNA, go to the next section, "Where Do I Go Next?"

The following procedure will restore your SNA configuration so that you do not have to manually reconfigure SNA. Continue with step 1.

1. Enter `cd /` at the system prompt.
2. Insert the backup image labeled "Configuration File for rsconf" into your tape or diskette drive.
3. Enter `restore -xqvf /dev/name ./tmp/.SNA_migration` where *name* is the name of your tape or diskette drive.

Where Do I Go Next?

If you need to install optional software, go to "Chapter 6. Optional Software Installation."

If you do *not* need to install optional software, go to "Chapter 8. Post-Installation Procedures."

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **pax** command, **smit** command, **sysck** command, **tar** command, and **ls** command.

The Backup Overview in *System Management Guide* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *System Management Guide* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *System Management Guide* provides information on mounting files and directories, mount points, and automatic mounts.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

Chapter 3. BOS Installation from a System Backup

This chapter describes how to install a system from a backup copy (image) of the root volume group on a previously installed system.

Note: If you used the procedures in “Chapter 5. BOS Installation for Use with a /usr Server” to install your system, you cannot reinstall your system from a backup image.

This chapter includes the following sections:

- Introduction to BOS Installation from a System Backup 3-2
- Flow Chart for BOS Installation from a System Backup or mkysyb 3-4
- Prerequisite Tasks and Conditions 3-5
- Installation Procedure 3-7
- Advance Path 3-37
- Related Information 3-40

Introduction to BOS Installation from a System Backup

A *root volume group* is a disk, or group of disks, that contain the boot (startup) files, the Base Operating System (BOS), system configuration data, and any optional software products that were installed.

This procedure to install from a system backup can be used for two reasons:

- To restore a corrupted system using the system's own backup image.
- To install and configure software on one system and then duplicate that installation on other systems. This technique is called *cloning*.

Note: To use the procedure described in this chapter, the backup copy must have been created using BOS Version 3.2. Within the Version 3.2, there are several different ways to create backups. To use the procedures in this chapter, the backup must have been created by using the SMIT Backup the System menu, or from the command line using the **mkszfile** and **mksysb** (make system backup) commands. In this chapter, the term *backup* always means a backup created using these techniques. If you need to create a backup, use the procedures in "Chapter 15. Backing Up Your System."

You can install using a backup image that is stored on tapes or diskettes. You can also install a backup image that is stored in a directory on your network installation server.

It is important to understand the terms *source system* and *target system*. The source system is the system from which you created the backup copy. The target system is the system on which you are installing the backup copy.

There are two significant advantages to installing from a backup image. The first advantage is that in addition to installing BOS, all of the optional software that was installed on the source system will be automatically installed on the target system. This will eliminate, or at least reduce, the need to perform optional software installation tasks.

The second advantage is that user configuration information may be retained. This means that you may avoid some of the configuration tasks that normally must be done after a system is installed. The configuration information will be retained during installation if the following two conditions are met:

- The target system has the same hardware configuration as the source system.
- The target has at least as much disk space as the source system.

During the installation of the Base Operating System (BOS), the system checks to see if the target system has enough disk space to create all the logical volumes that are stored on the backup. If there is enough disk space on the target system, the entire backup is recovered. If there is not enough disk space, the installation will halt and the system will prompt you to choose more destination hard disks. When file systems are created on the target system they will be the same size as they were on the source (except for **/tmp**).

After the installation is complete, the Object Data Manager (ODM) on the target system is reconfigured. If the target system does not have exactly the same hardware configuration as the source system, the device attributes may be modified in the following target system files:

- All files in **/etc/objrepos** beginning with 'Cu'
- All files in the **/dev** directory.

Note: If you are using backup installation for cloning, there are two types of configuration data that you may not want copied to the target systems: passwords and network addresses. If passwords from the source are copied to the target systems, this can create security problems. If network addresses are copied to a target system, duplicate addresses can disrupt network communications.

If you do not want this information copied to your target system, you have two choices:

- Use a backup image that was created before the source system was configured with this information.
- Manually modify this information on the target system immediately after the backup image is installed.

This chapter explains two different methods for installing a backup image: New Installation, and Complete Overwrite Installation. The instructions are combined in one procedure because the two types of installation are very similar. The differences in the procedures will be pointed out where they occur.

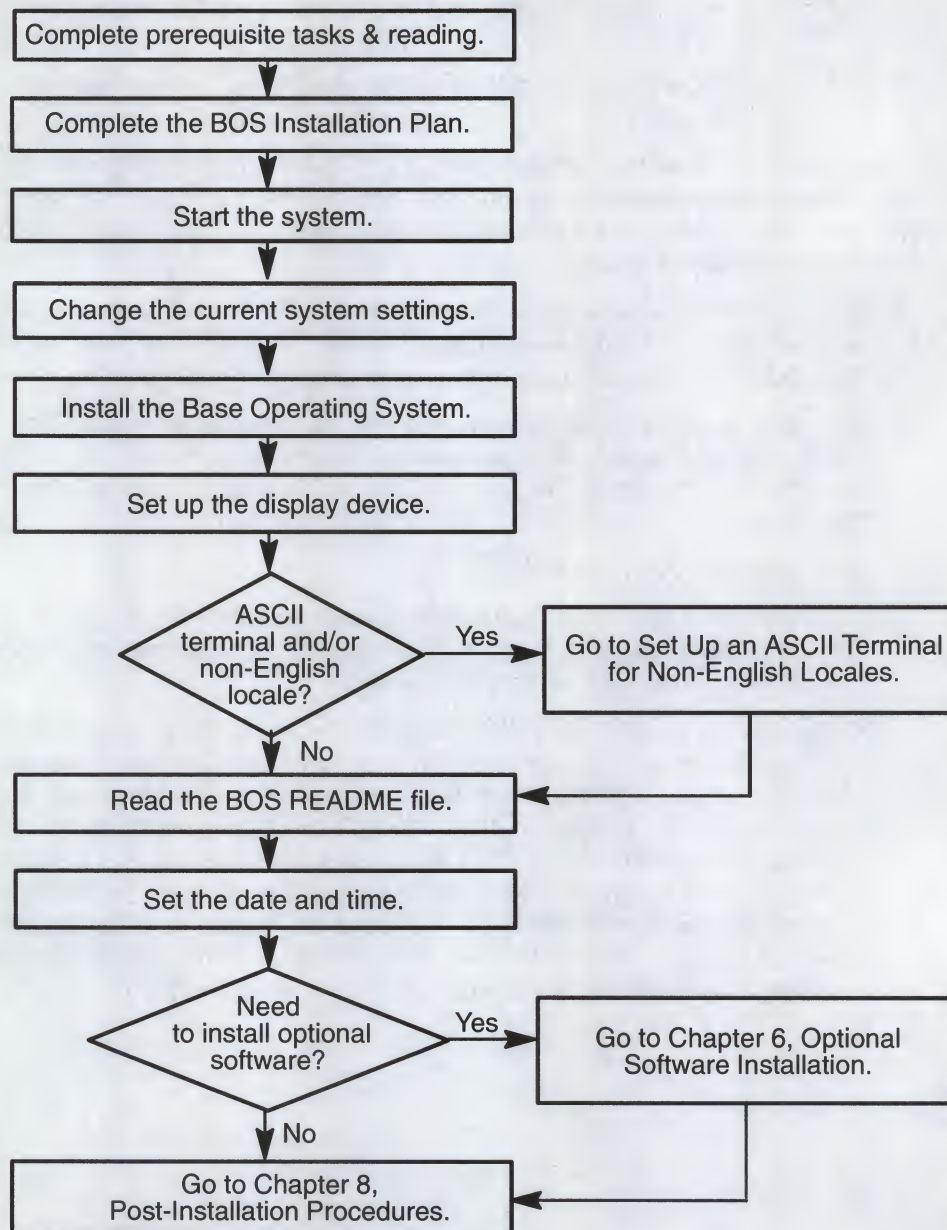
1. *New Installation* is performed when the hard disk or disks you are installing the backup onto are *empty*. A hard disk is empty if it does not contain any data or if it contains some data, but it does not contain a root volume group (it is not bootable).
2. *Complete Overwrite Installation* is used when a previous version of BOS is already installed on your system, and you want to completely overwrite the existing version of BOS. This procedure may impair recovery of data or destroy all existing data on your hard drives.

Use Complete Overwrite when:

- You want to install onto disks that contain an existing root volume group, but you want to completely overwrite the root volume group. (For example, this might occur if your root volume group has become corrupted.)
- You want to reassign your hard disks. (For example, if you have four hard disks and they all belong to one root volume group, you want to separate the disks into two volume groups. You might first do a Complete Overwrite Installation and select the first two disks as the installation destination. These disks would become the root volume group. You could then use SMIT to combine the remaining two disks into a second (nonroot) volume group. The result would be two separate volume groups. All of the operating system files would be in the root volume group and you could store user data in the second volume group. The advantage is that if the operating system is updated or reinstalled, the user's data would be unaffected.)

Flow Chart for BOS Installation from a System Backup or mksysb

This flow chart outlines the basic steps you must perform to install the Version 3.2 Base Operating System from backup or **mksysb**.



Prerequisite Tasks and Conditions

1. All hardware must already be installed, including any external devices, such as tape and CD-ROM drives, and all necessary microcode.
2. You should be familiar with the procedures for operating your hardware. If you are not, read "Chapter 18. Hardware Basics." Then, return here and continue with the next step.
3. In this chapter, you will be using the System Management Interface Tool (SMIT). If you are not familiar with SMIT, read "Chapter 19. SMIT Basics." Then, return here and continue with the next step.
4. Locate the key to the lock on your system unit.
5. Locate media that contains your system backup:

Tape

Find the tapes that contain the backup image you want to install.

Note: These tapes must have been created in one of two ways:

- Using the SMIT Backup the System menu
- OR
- From the command line using the **mkszfile** and **mksysb** commands.

Diskette

Find the diskettes that contain the backup image you want to install.

Note: These diskettes must have been created in one of two ways:

- Using the SMIT Backup the System menu
- OR
- From the command line using the **mkszfile** and **mksysb** commands.

Find the following BOS diskettes:

- Boot diskette
- Display diskette
- Install/Maintenance diskette
- Display Extensions diskette (if necessary).

Also, if you are using a display adapter card, be sure that you have the display diskette from that manufacturer.

Note: If you are not sure whether you have a display adapter installed, consult the "About Your Machine" document that was shipped with your system. It contains a list of the factory hardware shipped with your system.

Network

Before you can install a backup image from a network server, you must boot (start) your system using CD-ROM, tape, or diskettes. In section "B. Start the System," you should follow the instructions for the type of *boot media* you are using. When the word "Network" again reappears in the text, switch back to using the instructions next to the word "Network."

Note: If you will be pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must boot your system from a tape or diskette that has been created on a system that has the FDDI software installed and all associated service updates either applied or committed.

If necessary, use the **lslpp** command to see if the FDDI service updates have been applied or committed on your system. To do this, type the following:

```
lslpp -h
```

and press Enter.

Check the screen listing to see if the FDDI service updates have been applied or committed. If they do not appear in the listing, refer to the documentation that accompanied your installation media for information about how to install the FDDI service updates. Once they are installed, continue with the next step.

For more information, refer to the following articles:

- For instructions on how to create BOSboot diskettes, refer to "Chapter 11. Creating BOSboot Diskettes "
- For instructions on how to create a backup image, refer to "Chapter 15. Backing Up Your System."

6. Locate your boot media.

Note: Your *boot media* may be different from the media containing your system backup. For example, you may be *booting* from CD-ROM but *installing* the system backup from tape. Booting from diskette and installing from tape, however, is not supported.

7. Continue with the next section, "The Installation Procedure."

Installation Procedure

This chapter contains instructions for the following sections:

- A. Complete the BOS Installation Plan
- B. Start the System
- C. Change the Current System Settings
- D. Start the Installation Process
- E. Set up the Display Device
- F. Setting Up an ASCII Terminal
- G. Read the BOS README file
- H. Set the Date and Time
- I. Reconfiguring Your Network Software
- J. mksysb Installation Troubleshooting and Error Messages.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin with the next section, "A. Complete the BOS Installation Plan." This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of BOS and only need a minimal set of instructions, you can skip to page 3-37 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin with the next section.

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning Your Installation" and complete the BOS Installation Plan. Then, return here and continue with the next section, "B. Start the System."

B. Start the System

PROCEDURE:

1. If your system is turned OFF, go to step 2.
If your system is ON, use the following procedures to shut down the system.

- a. If you are not already logged in as root, log in as root now.
- b. Type the following:

```
shutdown
```

and press Enter.

The shutdown process is complete when the following message is displayed:

```
Halt completed ...
```

Note: On some models (such as the RISC System/6000 580, 950, 970, and 980), the **shutdown** command turns off the power to the system unit. It does not, however, automatically flip the power switch to the OFF position.

- c. When the shutdown process is complete, flip the system unit power switch to the OFF position. Do not turn your system unit back on until you get to step 5.

Note: If the **shutdown** command turned off the system unit, you still need to flip the power switch to the OFF position.

2. Depending on the system unit, do one of the following:
 - If your system is a RISC System/6000 model 580, 950, 970, or 980, turn the system key to the SERVICE position.
 - If your system is *not* one of these models, turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, CD-ROM drives, tape drives, monitors, and external disk drives.

Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

4. If you are not using an ASCII terminal, skip to step 5.

If you are using an ASCII terminal, set the terminal's communications options as follows:

- Line Speed (baud rate) = 9600
- Word Length (bits per character) = 8
- Parity = no (none)
- Number of Stop Bits = 1
- Interface = RS-232C (or RS-422A)
- Line Control = IPRTS

It is also recommended that you set the terminal's keyboard and display options as follows:

- Screen = normal
- Row and Column = 24x80
- Scroll = jump
- Auto LF (line feed) = off
- Line Wrap = on
- Forcing Insert = line (or both)
- Tab = field
- Operating Mode = echo
- Turnaround Character = CR
- Enter = return
- Return = new line
- New Line = CR
- Send = page
- Insert Character = space

Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the on-screen instructions to set these options. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set these options. Please note that some non-IBM terminals may have different option names and settings than those listed here.

5. Flip the system unit power switch to the ON position.

6. Depending on the system unit, do one of the following:

- If your system is *not* a RISC System/6000 model 580, 950, 970, or 980, skip to step 7.
- If your system is a RISC System/6000 model 580, 950, 970, or 980, do the following:
 - a. Wait three seconds.
 - b. Turn the system key to the SECURE position.

7. After several minutes, the 200 code will appear on the three-digit LED display that is mounted in the system unit.

Note: On some systems, you may have to flip open a plastic door to see the three-digit LED display.

8. Depending on the type of media you are using to boot (start) the system, do the following:

Note: Your *boot media* may be different from the media containing your system backup. For example, you may be *booting* from CD-ROM but *installing* the system backup from tape. Booting from diskette and installing from tape is not supported.

- | | |
|----------|---|
| CD-ROM | Insert the AIX/6000 Version 3.2 BOS CD-ROM into a disc caddy and insert the caddy into your CD-ROM drive. Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it. |
| Tape | Insert the Version 3.2 BOS tape you want to use to boot the system into the tape drive. Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens. |
| Diskette | Insert the Version 3.2 BOS Boot diskette into the diskette drive. Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes. |

9. If the system key is not already turned to the SERVICE position, turn it to the SERVICE position now.

10. Press the yellow system RESET button twice in quick succession.

Note: On some systems, a Main Menu or Select Language screen may appear. If the Main Menu appears, follow the on-screen instructions to select the Exit Main Menu & Start System (boot) option. If the Select Language screen appears, follow the on-screen instructions to return to the Main Menu and select the Exit Main Menu & Start System (boot) option.

11. Your system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.

- | | |
|----------|--|
| CD-ROM | If you are booting from CD-ROM, go to step 14. |
| Tape | If you are booting from tape, go to step 14. |
| Diskette | If your system has one of the following display adapters installed, go to step 12. Otherwise, go to step 13. |

Note: If you ordered an adapter with your system, the adapter name will be listed on your "About Your Machine" document as one of the following:

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any other IBM graphics adapter.

If your system does not have one of the above adapters installed, go to step 13.

12. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).

Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette in the drive and insert the BOS Display diskette.

Continue with step 14.

13. When the c07 code appears on your three-digit LED system display, remove the diskette in the drive and insert the BOS Display diskette into the diskette drive.

Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 14.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

14. The screen may stay blank for several minutes. Then, c31 will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.

Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

Press the specified keys only on the console that you want to use as your system console.

| | |
|----------|----------------|
| CD-ROM | Go to step 16. |
| Tape | Go to step 16. |
| Diskette | Go to step 15. |

15. A message similar to the following displays:

Insert BOS Install/Maint Diskette and Press Enter.

When you see this message, remove the Display diskette, insert the BOS Install/Maintenance diskette, and press Enter.

Note: Depending on your system, you may be prompted for Volume 2 of the Install/Maintenance diskette. If you are, remove Volume 1 from the diskette drive, insert Volume 2, and press Enter.

Note:

16. A series of messages is displayed. This may take several minutes.

Note: It is normal for the system to move the tape back and forth during this period.

A screen similar to the following displays:

AIX 3.2 INSTALLATION AND MAINTENANCE

Select the number of the task you want to perform.

>>> 1 Install AIX.
2 Install a system that was created with the SMIT "Backup the System" function or the "mksysb" command.
3 Install this system for use with a "/usr" server.
4 Start a limited function maintenance shell.

Type the number for your selection, then press "Enter": 1

Note: The >>> (arrows) on this menu indicate the default selection. During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key above the right Shift key.

CD-ROM Continue with step 17.

Tape Continue with step 17.

Diskette Remove the BOS Install/Maintenance diskette from the diskette drive.
Then continue with step 17.

17. To select **2 Install a system that was created with the SMIT "Backup the System" function or the "mksysb" command**, type the following:

2

and press Enter.

Continue with the next section, "C. Change the Current System Settings," beginning on page 3-13.

C. Change the Current System Settings

Note: Do *not* select 0 on the following Current Systems Settings screen until after you have read all of the instructions in section C.

A screen similar to the following displays:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter.

| | CURRENT CHOICE |
|---|------------------------|
| 1 INPUT Installation Device | 150 mb Tape: /dev/rmt0 |
| 2 DESTINATION Disks | 00-01-00-00 |
| 3 STARTUP (Boot) Device | 00-01-00-00 |
| | |
| 99 Return to previous menu | |
| 0 Install the AIX base operating system with the current settings | |

Type the number for your selection, then press Enter: 0

Warning: When updating from Version 3.1 to Version 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must change the Input Installation Device and then specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

Continue with the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must change the Input Installation Device and then specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

If you need to change the input installation device, continue with the following procedure.

PROCEDURE:

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following displays:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|-----------|---------------|
| 1 | Diskette: | /dev/fd0 | 00-00-0D-00 |
| 2 | 8mm Tape: | /dev/rmt0 | 00-08-00-30 |
| >>> 3 | CDROM: | /dev/cd0 | 00-08-00-40 |
| 4 | Token-Ring: | /dev/tr0 | 00-00 |
| 5 | Token-Ring: | /dev/tr1 | 00-01 |
| 6 | Standard Ethernet: | /dev/en0 | 00-02 |
| 7 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 8 | Standard Ethernet | /dev/en1 | 00-03: |
| 9 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. If you are installing the system backup image from a network installation server, skip to step 5.
If you are using another type of installation device, continue with step 3.
3. Type the number for the device supplying the software you want to install and press Enter.
4. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Skip to the next section, "Destination Disk," beginning on page 3-17.

5. Type the number for the network device supplying the software you want to install and press Enter.

Note: If you booted from diskette and selected FDDI as the network device, you will be prompted to insert the Communications Extensions diskette. When you see the following message:

Insert Communications Extensions Diskette . . . Press Enter

Remove the BOS Install/Maintenance diskette, insert the Communications Extensions diskette in the floppy drive, and then press Enter.

The exact appearance of the screen will vary according to the type of network device you are using. The following example shows the screen that appears if you select an Ethernet High-Performance LAN adapter. However, use the procedures that follow for all versions of this screen.

| ENTER NETWORK PARAMETERS | | |
|--|---|-----------------|
| Enter the network parameters that will allow this machine to access the network install server over the en0 network interface. | | |
| 1 | Client address: (Network address of this machine.) | 11.11.11.11 |
| 2 | Server address: (Network address of the network install server.) | 11.111.111.111 |
| 3 | Gateway address: (Optional, required if network is on a subnet.) | |
| 4 | Subnet mask: (Optional, required if network is on a subnet.) | 444.444.444.444 |
| 5 | Ethernet connection type: (bnc or 15 pin d-type) | 15 pin d-type |
| 99 Return to previous menu | | |
| 0 Commit current network settings and return to Settings Menu | | |
| Type the number for your selection, then press "Enter": 0 | | |

If all of the information on the screen is already set correctly, skip to step 15. Otherwise, continue with step 6.

Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

6. Type the following:

1

and press Enter

The cursor is at the entry field for Client Address. This is the address of the machine on which you are installing BOS.

7. Refer to your Network Parameters Worksheet. Type the Client IP Address and press Enter.

8. Type the following:

2

and press Enter.

The cursor is at the entry field for server IP Address. This is the address of the installation server.

9. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

10. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

11. If you are *not* using a gateway, press Enter.

If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

12. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

13. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

14. If you are using a FDDI network, skip to step 15.

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.

Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

15. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Destination Disk."

Destination Disk

This section describes how to change the hard disk or disks where the backup image will be installed. The location codes of the hard disks are displayed on the Change Destination Hard Disk(s) screen in the LOCATION column. The format for the location code for a direct attached disk is: AA-BB where AA is 00 (zero) and BB is the slot number for the hard disk. The format for the location codes for all other hard disks is described under Vital Product Data and Location Codes in *POWERstation and POWERserver Common Diagnostics and Service Guide* (SA23-2687).

Warning: It is extremely important that you install to the correct destination. If your destination disks are not empty, then all of the existing data on the destination disks will be destroyed during BOS installation.

If you need to change the destination disk or disks, continue with the following procedure. If you do not need to change the destination disk, go to the next section, "Startup (Boot) Device."

PROCEDURE:

1. To select **DESTINATION Disks** at the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following displays:

| CHANGE DESTINATION HARD DISK(S) | | | | | |
|--|---|-------------|----------|------------------|---------------|
| Select the Destination Hard Disks. At least one bootable disk must be selected. If necessary, more than one hard disk may be selected. To cancel a selection, enter the number a second time. Current selection is indicated by >>>. | | | | | |
| | | LOCATION | SIZE(MB) | VOLUME GROUP ID | BOOTABLE DISK |
| >>> | 1 | 00-07-00-00 | 320 | 00014099342d572c | Yes |
| >>> | 2 | 00-07-00-10 | 320 | 00014099342d572c | No |
| 99 Return to previous menu | | | | | |
| 0 Commit current selection and return to Settings Menu | | | | | |
| Type the number for your selection, then press Enter: 0 | | | | | |

The exact appearance of this screen will vary according to the configuration of your system. In the example, the system has two hard drives, each 320 megabytes in size. Because the disks have volume group ID numbers, the disks are not empty. Together these hard disks make up the volume group identified by the number 00014099342d572c. Since there is a Yes in the Bootable Disk column for one of the disks, this means that these hard disks make up a BOS root volume group that can be used to boot (start) the system.

2. To select or deselect a hard disk, type the disk's menu number and press Enter.
 - If the disk was previously selected, the greater-than signs (>>>) disappear from the menu indicating that the disk has been deselected.
 - If the disk was previously *not* selected, the greater-than signs (>>>) appear to the left of the disk indicating that it is now selected.
3. Continue selecting and deselecting hard disks as required. You can select multiple hard disks as the destination of the AIX Base Operating System (BOS). When you are finished, go to the next step.
4. When you have finished selecting and deselecting the destination hard disks, type the following:
0
and press Enter.
The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Startup (Boot) Disk."

Startup (Boot) Disk

This section describes how to select the hard disk within the group of destination disks that will contain the startup (boot) image. This is the hard disk that will be used to start your system after BOS is successfully installed and you reboot the system.

PROCEDURE:

1. To select **STARTUP (Boot) Disk** at the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following displays:

CHANGE STARTUP DISK

Choose the ID# of the startup (boot) disk.

STARTUP DISK

>>> 1 00-01-00-00

99 Return to previous menu

Type the number for your selection, then press ENTER: 0

2. Type the number for the disk on which you want your startup (boot) image to reside, and press Enter.
3. When you have finished, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "D. Start the Installation Process," beginning on page 3-20.

D. Start the Installation Process

When you have finished setting all of the values on the Current System Settings menu, you can instruct the system to begin installing the backup image.

1. To select **Install the Base Operating System with the current settings** at the Current System Settings menu, type the following:

0

and press Enter.

A screen similar to the following displays:

FINAL WARNING

Select the number of the desired action

If your destination disks contain any data, then this SMIT "Backup The System" (mksysb) image installation will destroy or impair recovery of all data on the selected disks

99 Return to Previous Menu
0 Continue with Install

Type the number for your selection, then press ENTER.

2. To begin installing the system, type the following:

0

and press Enter.

If within a few seconds you see a `Device is not ready` message, go to step 3.

If this message does *not* occur, go to step 4.

3. The wrong input device was probably selected. If this error occurs, you *must* return to step 8 in section "B. Start the System" on page 3-10 and repeat the install procedure.

4. Do one of the following:

Note: If you are using a network input device, make sure you follow the instructions next to the network icon from this point on.

Tape Go to step 5.

Diskette Go to step 5.

Network Go to step 6.

5. A message similar to the following displays:

Please insert the first BOS backup tape

and press Enter to continue ...

If the media containing your system backup is different from the boot media, remove the boot media from the drive and insert the first BOS backup tape or diskette into the drive and press Enter.

Continue with step 10.

6. In a few seconds, the following messages are displayed:

```
netinstall
contacting server.....
```

Your client machine is contacting the installation server and requesting the Network Install File Selection menu.

Note: If the installation server cannot be contacted, a system message displays and the Current System Settings menu reappears. Reselect item **1 INPUT Installation Device** and see if your adapter and addresses are set correctly. If these items are correct, contact your network administrator.

7. When the installation server has been contacted, the Network Install File Selection menu will appear. From this menu, you select the software you want to install. The appearance of this menu will vary depending on the software that has been loaded on the server.

A screen similar to the following displays:

| NETWORK INSTALL FILE SELECTION | |
|--|--|
| 1. | /inst.images/risc_sys6000/3.2/X11rte |
| 2. | /inst.images/risc_sys6000/3.2/bos.obj.mkysyb |
| 3. | /inst.images/risc_sys6000/3.2/bosnet |
| 4. | /inst.images/risc_sys6000/3.2/bssiEn_US |
| | |
| 99. | Return to CHANGE SETTINGS menu |
| 0. | Continue with Network Install |
| Choose the ID# of the file(s) to select or exclude | |

8. Your system administrator should have given you the name of the backup image you want to install. Type the ID number for the name of the backup image you want to install. Then press Enter.

9. To begin the installation, type the following:

0

and press Enter.

10. As the system begins installing the backup system image, system messages will be displayed as the following activities occur:

- File systems are created.
- Files are restored.

Tape When the following screen appears (this will take a while), continue with step 11.

Network When the following screen appears (this will take a while), continue with step 11.

Diskette As the installation process continues, a message similar to the following may display when it is time to insert another diskette:

```
pax: Ready for volume 2.  
pax: Type "go" when ready to proceed (or "quit" to  
abort):
```

a. Insert the next diskette, type the following:

```
go
```

and press Enter.

Continue inserting diskettes when prompted.

b. When the following screen appears (this will take a while), continue with step 11.

Note: There are two error messages that may be displayed during BOS installation that you can ignore. The messages state that no software products were found and that no valid products were left to process. These messages are a normal part of the install process and are not indicative of any errors.

AIX Base Operating System installation is complete.
Please perform the following three steps to activate the changes
made during this installation.

1. Make sure your installation media (tape, diskette, etc.) has been removed from the input device.
2. Turn the system key to the NORMAL position.
3. Press Enter to restart (reboot) the system.

11. Remove the tape or diskette from the drive.

Tape

Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

12. If the backup image source machine was *not* configured for network communications, skip to step 13.

If the source system *was* configured for network communications, your target system now has the same network configuration and address as the source machine. If your target system is connected to the network, network communications for both machines will be disrupted when you restart this target system.

Warning: This can cause total disruption of network communications for all machines on your network. To prevent this from happening, disconnect your target system's network cable before continuing. Later in this chapter you will be told when to reconnect the cable.

13. Turn the system key to the NORMAL position.

14. Press Enter to shut down and reboot the system. System messages will appear as the system goes through the shutdown process. As the system reboots, the screen may go blank for a few minutes.

Note: If your console device is different from the device saved in the backup, the system may do a shutdown and a second boot to reassign the console device.

When the system completes the boot (startup) process, a login prompt is displayed on the console.

15. To log in to the system as root, type the following:

```
root
```

and press Enter.

A system prompt appears.

Note: If the `root Password:` prompt appears, type in the root password that was active on the source system when the backup was created.

Your Base Operating System is now installed.

Note: Although a message may appear on the screen instructing you to read the README files, it is not necessary to read those files now.

Go to the next section, "E. Set Up the Display Device," beginning on page 3-24.

E. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.
2. To see which display name is stored in TERM, type the following:

```
echo $TERM
```

 (note that TERM is in capital letters.)

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

Possible responses to the **echo \$TERM** command:

If TERM = dumb

The system was unable to automatically recognize your display. You must manually set the display name. Go to step 3.

If TERM = hft

And you are using an hft such as IBM models 5081, 6091, or 8508, then go to the section "G. Read the BOS README File" on page 3-28. If you are not using an hft, go to step 3.

If TERM = a specific model number

Such as `ibm3151` and the number is correct, go to "F. Setting Up an ASCII Terminal" on page 3-26. If the number is wrong, go to step 3.

3. Use the following procedures to manually set the TERM name.
 - a. If you are using a VT100 terminal, then your TERM name is `vt100`; skip to step d. If you are not using a VT100, continue with step b.
 - b. Display names must be typed in a specific format. To see the terminfo list of the valid display names, type the following:

```
ls /usr/share/lib/terminfo/x
```

(where `x` is the first letter [not capitalized] of the name of the manufacturer or type of your display. For example, if you have an IBM display, you would type the following:

```
ls /usr/share/lib/terminfo/i
```

where `i` stands for IBM.)

and press Enter.

- c. Search the list and find the correct format for the name of your display and write it down. Make careful note of whether the letters are capitalized. For example, for a model 3151 display, the list will show `ibm3151` as the correct display name.
- d. Type the following:

```
export TERM=xxx
```

(where `xxx` is the exact display name that you copied from the terminfo list.)

and press Enter.

For example, if you are using a 3151, you would type `export TERM=ibm3151` and then press Enter.

4. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 3d. every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second "/" are the device name. In this example it is `tty0` (note that the last character in this example is a zero, not the letter "o").

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where `xxx` is the display name you used in step 3d and `zzz` is the tty device name you found in step 4a.)

Note: The `-l` in this command is a lowercase "L" and `term` is in lowercase letters.

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, "F. Setting Up an ASCII Terminal" beginning on page 3-26.

F. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments).

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the next section, "G. Read the BOS README File," on page 3-28.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE

1. To see which locale (language) is stored in the LANG variable, type the following:

```
echo $LANG      (where LANG is in capital letters.)
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

| | | | |
|-------|----|-------|-----------------|
| C | | | (POSIX) |
| en_GB | or | En_GB | (Great Britain) |
| en_JP | or | En_JP | (Japan) |
| en_US | or | En_US | (United States) |

YES: The system displayed one of the above locales, go to the next section, "G. Read the BOS README File," on page 3-28.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo \$LANG** command a *lowercase* letter?

YES: It is a *lowercase* letter, go to the next section, "G. Read the BOS README File," on page 3-28.

NO: It is an *uppercase* letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Make careful note whether the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see which tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname of the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` are the numbers identifying your tty device.

7. To set the input and output map files, type the following:
(where `-l` is a *lowercase* "L", `x` is the number identifying your tty from step 6 and *mapfile* is the name you wrote down from the *termmap* listing in step 5.)

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "G. Read the BOS README File," beginning on page 3-28.

G. Read the BOS README File

A README file is an online document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the installation section of the BOS README file before you continue. This section will list any changes that you should make to the procedures in the rest of this chapter. If you have already read this README file, you can skip to "H. Set the Date and Time" on page 3-29.

The following procedures contain instructions for viewing the BOS README file. As you read the README file, write any corrections to this installation procedure into this manual.

PROCEDURE:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

(**Note:** there are no blank spaces in the following command.)

```
/2.Installation
```

and press Enter.

4. The installation notes appear.

To show the next page Press Enter.

To show the previous page Type -1 and press Enter.

Read the installation part of the README file and write the specified corrections into this manual.

5. When you are finished, type the following at the colon (:) prompt:

```
q
```

and press Enter.

The system prompt (#) reappears.

Continue with the next section of this manual, "H. Set the Date and Time," beginning on page 3-29.

H. Set the Date and Time

PROCEDURE:

1. Type the following:

date

and press Enter.

The system displays the date and time.

Note: Time on your system is expressed in terms of a 24-hour clock, often called "military time." In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to step 11 on page 3-32.
- To change the date and time, go to step 2.

2. Type the following:

smit startup (or smit -C startup if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| | | | |
|---|------------------------|-----------------------|----------|
| SYSTEM STARTUP MENU | | | |
| Your Base Operating System has been installed. You can now perform any of the options below. | | | |
| Move cursor to desired item and press Enter. | | | |
| Backup the System System Environments Install / Update Software TCP/IP NFS | | | |
| F1=Help F9=Shell | F2=Refresh F10=Exit | F3=Cancel Enter=Do | F8=Image |

3. Select **System Environments** and press Enter.

A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change Number of Virtual Terminals at Next System Restart
Change / Show Date, Time, and Time Zone
Change / Show Characteristics of Operating System
Manage Language Environment
Change Number of Licensed Users

4. Select **Change / Show Date, Time, and Time Zone** and press Enter.

A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change / Show Date, Time, and Time Zone
Change Language Environment
Change Number of Licensed Users

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

Does this time zone go on
DAYLIGHT SAVINGS TIME?

1 yes
2 no

| | | |
|----------|------------|-----------|
| F1=Help | F2=Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to **yes** and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to **no** and press Enter.

A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

| | | |
|-------------|----------------------------|----------|
| [TOP] | | |
| (CUT0GDT) | Coordinated Universal Time | (CUT) |
| (TZ 1DT1) | Azores; Cape Verde | (CUT -1) |
| (TZ 2DT2) | Falkland Islands | (CUT -2) |
| (TZ 3DT3) | Greenland; East Brazil | (CUT -3) |
| (AST4ADT) | Central Brazil | (CUT -4) |
| (EST5EDT) | Eastern U.S.; Columbia | (CUT -5) |
| (CST6CDT) | Central U.S.; Honduras | (CUT -6) |
| [MORE...12] | | |

F1=Help
F8=ImageF2=Refresh
F10=ExitF3=Cancel
Enter=Do

6. Move the cursor to highlight your time zone and press Enter. Use the Up and Down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following displays:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|--|---------------------------|
| Old time zone | [Entry Fields] CST6CDT |
| Time Zone | CST6CDT |
| Does this time zone go on daylight savings time? | yes |
| * YEAR (00-99) | [91] |
| * MONTH (01-12) | [04] |
| * DAY (01-31) | [15] |
| * HOUR (00-23) | [11] |
| * MINUTES (00-59) | [32] |
| * SECONDS (00-59) | [05] |

F1 = Help
F5 = Undo
F9 = ShellF2 = Refresh
F6 = Command
F10=ExitF3 = Cancel
F7=Edit
Enter=DoF4 = List
F8 = Image

7. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following displays:

COMMAND STATUS

Command: OK stdout: yes stderr: no

Before completion, additional instructions may appear below

Mon Apr 15 11:32:05 CST 1991

Now exit SMIT and log out and then back in so that any changes to date, time, and time zone will be reflected in your current session.

| | | | |
|----------|------------|-----------|------------|
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

8. Press F10 to exit SMIT.
 - If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Go to step 9.
 - If you did *not* change the time zone, you have finished setting the date and time. Go to step 11.
9. Use the following procedure to log off the system:

At the system prompt, type the following:

```
exit
```

and press Enter.

The login prompt is displayed. Continue with step 10.
10. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting the date and time. Continue with step 11.
11. If you disconnected your network cable before you rebooted your system, skip to section "I. Reconfiguring Your Network Software." If you did not disconnect your network cable, continue with step .

You have completed this procedure. If the backup image you installed did not contain all of the optional software you need to install on this system, go to "Chapter 6. Optional Software Installation." If you do *not* need to install additional optional software, go to "Chapter 8. Post-Installation Procedures."

I. Reconfiguring Your Network Software

If the source machine for the backup image you just installed was already configured for network communications, your target system now has the same network configuration and address as the source machine. This will disrupt network communications for both machines. Additionally, the network configuration settings may not be correct for the hardware on the target machine; therefore, you must reconfigure the network communication settings on this machine before you try to use the network.

Warning: A conflicting or incorrect network configuration can result in total disruption of network communications for all machines on your network.

To reconfigure your network communication settings, continue with the next section, "Reconfiguring TCP/IP."

Reconfiguring TCP/IP

PROCEDURE:

1. Go to "Chapter 16. Planning Your Installation" and complete the TCP/IP Worksheet.
2. Type the following:

`smit mktcpip` (or `smit -C mktcpip` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

Available Network Interfaces

Move cursor to desired item and press Enter.

| | |
|-----|------------------------------|
| en0 | Ethernet Network Interface |
| et0 | IEEE 802.3 Network Interface |
| tr0 | Token-Ring Network Interface |

F1 = Help

F2 = Refresh

F3 = Cancel

F8=Image

F10=Exit

Enter=Do

This is a list of the available network interfaces that your system can use for network communications.

Note: The content of this list varies according to what is installed on your system.

3. Move the cursor to highlight the type of interface you are using for network communications and press Enter.

The Minimum Configuration & Startup screen will appear. The exact contents of this screen will depend on the type of network adapter you selected.

For example, if you selected the Token-Ring Network Interface, a screen similar to the following displays:

| Minimum Configuration & Startup | |
|---|----------------|
| To delete existing configuration data, please use Further Configuration menus. | |
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | |
| HOSTNAME | [Entry Fields] |
| Internet ADDRESS (dotted decimal) | [] |
| Network MASK (dotted decimal) | [] |
| Network INTERFACE | [] |
| NAMESERVER | tr0 |
| * Internet ADDRESS (dotted decimal) | |
| Domain Name | [] |
| Default GATEWAY Address | [] |
| (dotted decimal or symbolic name) | [] |
| RING Speed | |
| START TCP/IP daemons Now | 4 |
| | no |
| F1 = Help | F2 = Refresh |
| F5 = Undo | F6 = Command |
| F9 = Shell | F10 = Exit |
| F3 = Cancel | F4 = List |
| F7 = Edit | F8 = Image |
| Enter = Do | |

If your source machine was configured for TCP/IP when the backup was made, the fields in the Minimum Configuration & Startup screen will contain the values for the source machine. You now need to change these to the correct values for the machine on which you are performing the installation (the target).

4. Use the following procedures for all versions of the Minimum Configuration & Startup screen.

Note: Do *not* press Enter until you get to step 10.

Refer to your TCP/IP worksheet. Type the information from the worksheet to the following fields on the Minimum Configuration & Startup screen:

- HOSTNAME
- Internet ADDRESS
- Network MASK
- NAMESERVER Internet ADDRESS (if you have one)
- Domain Name
- Default GATEWAY Address (if you have one).

Note: Depending on your network configuration, you may not need to complete all of the entries on the Minimum Configuration & Startup screen.

5. Move the cursor to START TCP/IP daemons Now. Press the Tab key to change the default to yes.

6. You have the following choices:
 - If you are using an Ethernet Network Interface, continue with step 7.
 - If you are using the Token-Ring Network Interface, skip to step 8.
 - If you are using a Fiber Distributed Data Interface (FDDI) network, skip to step 9.
7. If you need to change the setting for the type of cable you are using, do the following:
 - a. Move the cursor to the `Your CABLE Type` field.

Note: On some computers (such as the model 220) the Ethernet connection is built into the computer itself. If this is the case with your computer, make sure that the `Your Cable Type` field is set to `N/A` (for not applicable).
 - b. Press the Tab key to alternate between `N/A`, `bnc`, and `dix`.
 - c. Skip to step 9.
8. If you need to change the RING speed setting, do the following:
 - a. Move the cursor to the `RING Speed` field.

Warning: If you are using Token-Ring, an incorrect ring speed setting can totally disrupt network communications for all systems on the network.
 - b. Press the Tab key to alternate between the values `4` and `16`.
 - c. Continue with step 9.
9. When you have finished making *all* your entries on the Minimum Configuration & Startup screen, confirm that the names and addresses are accurate.
 - If you need to make corrections to your entries, use the Up/Down cursor keys to move to the entry you need to correct and type over the old entry.
 - If your entries are correct, go to step 10.
10. To start the TCP/IP configuration process, press Enter.
11. A COMMAND STATUS screen appears. When the `Command: status` indicator changes to `OK`, press F10 to exit SMIT.
12. Reconnect your network cable.

TCP/IP is now ready to use.

You have completed this procedure. If the backup image you installed did not contain all of the optional software you need to install on this system, go to "Chapter 6. Optional Software Installation." If you do *not* need to install additional optional software, go to "Chapter 8. Post-Installation Procedures."

J. mksysb Installation Troubleshooting and Error Messages

Troubleshooting Tips

The following list of troubleshooting tips is provided as a guide and is not all inclusive. These tips apply to some of the most commonly reported **mksysb** installation problems:

- Verify that you have sufficient free blocks in the file systems to write temporary files.
- Verify that you are using the correct tape type for the density setting selected.
- Check that the block size is properly set.
- Verify that the tape is *not* write protected.
- Clean the tape drive at the recommended intervals and use only approved data grade tapes (not video tapes for 8mm).
- Check the file **/smit.log** for any errors from SMIT.
- 7206 4mm Dynamic Address Translation (DAT) tape drives can only use DAT tapes marked with the Dataphone Digital Services (DDS) symbol. Any other DAT tapes, for example, voice grade, will not work.
- Each of the file systems must have at least 500 blocks free when the **mksysb** backup is made. The system will need some work space in each file system when it is installing from a **mksysb** backup.
- Verify that your **mksysb** backup contains a **.fs.size** file. If you create the **mksysb** backup through SMIT, it is done automatically. If you run **mksysb** from the command line, you must run **mkszfile** first.

Configuration and Setup Error Messages

The following common system error messages are displayed when the related error condition occurs during a **mksysb** installation. Determine the cause of the error message and take the appropriate corrective action to continue with the **mksysb** installation:

- 0512-004: The **/fs.size** file does not exist. System backup canceled.
Either the **/** or **/tmp** file system is not large enough, or the **mksysb** command was run from a command line without first running the **mkszfile** command.
- 0512-0016 : Attempt to create a bootable tape failed: **bosboot -d /dev/device -a** failed with return code *number* or **mkinsttape /dev/device** failed with return code *number*. The return code *number* indicates the type of error that has occurred:
 - 2 Media is write protected.
 - 5 OR 1 Not enough space in one or more of the file systems:
 / must have at least 500 1K blocks.
 /tmp must have at least 7400 1K blocks.
 /usr must have at least 4000 1K blocks.
 - 11 Defective tape.
 - 42 or 45 **/usr/lib/boot/unix** is corrupted (may be 0 length) or the link to **/unix** is missing. Restore from original tape or create the missing link.
 - 48 Cannot write to the tape drive or cannot read **/dev/blv**. This is probably caused by an incorrect density setting for the tape drive/tape type/device-name combination. It could also be caused by a tape drive hardware problem or by dirty tape heads on the tape drive.

Advanced Path

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning Your Installation" and complete the BOS Installation Worksheet. Then, return here and continue with the next section.

B. Start the System

1. If the system is turned OFF, skip to step 2.
If the system is turned ON, use the **shutdown** command to shut it down.
2. If the system is a RISC System/6000 model 580, 950, 970, or 980, turn the system key to the SERVICE position.
If the system is *not* one of these models, turn the system key to the SECURE position.
3. Turn on all attached external devices, such as tape drives, monitors, and terminals.
4. If you are using an ASCII terminal, set the communications, keyboard, and display options as described in step 4 on page 3-9.

5. Flip the system unit power switch to the ON position.

Note: On some models (such as the RISC System/6000 model 580, 950, 970, and 980), the **shutdown** command turns off the system unit but it does not automatically flip the power switch to the OFF position. In this case, flip the power switch to the OFF position and then back to the ON position.

6. If the system is a RISC System/6000 model 580, 950, 970, or 980, wait three seconds and then turn the system key to the SECURE position.
If the system is *not* one of these models, continue with the next step.
7. After several minutes, the 200 code will appear on the three-digit LED display.
8. Insert the first BOS tape or BOS Boot diskette.

Note: If you will be pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must boot your system from a tape or from diskettes that has been created on a system that has the FDDI software installed and all associated service updates either applied or committed.

If necessary, enter `lsllpp -h` to see if the FDDI service updates have been applied or committed on your system. If they have not, refer to the documentation that accompanied your installation media for information about how to install the FDDI service updates.

9. If the system key is not already turned to the SERVICE position, turn it to the SERVICE position now.
10. Press the yellow system RESET button twice in quick succession.
11. If you are installing from tape, go to step 14.
12. When `c07` appears on the three-digit LED display, insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
13. When `c07` appears the second time, insert the BOS Display diskette.
14. When `c31` appears on the three-digit LED display, select the device that you want to use as your console.
15. If you are installing from diskettes, insert the BOS Install/Maintenance diskette.

16. At the AIX 3.2 INSTALLATION AND MAINTENANCE screen, select item 2.

C. Change the Current System Settings

1. To change the INPUT Installation Device, enter `1` and choose the installation device.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must change the Input Installation Device and then specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

2. To change the DESTINATION Disks, enter `2` and choose your destination disks.
3. To change the STARTUP (Boot) Disk, enter `3` and choose your startup disk.

D. Start the Installation Process

1. From the Current System Settings screen, enter `0` to begin the installation.
2. From the FINAL WARNING screen, enter `0` to start the installation.
3. What is your installation media?

DISKETTES:

- Insert the first SMIT **mksysb** backup diskette.
- Insert each diskette when prompted.

NETWORK:

- Choose the SMIT **mksysb** backup image from the Network Install File Selection menu.
- Enter `0` to continue the installation.

TAPE:

- Insert each tape if prompted.

4. When the reboot screen appears, do the following:
 - Remove the tape or diskette from the drive.
 - Turn the system key to the NORMAL position.
 - Press Enter to reboot the system.
5. After the system reboots, log in to the system as root.

E. Set Up the Display Device

1. If you are using an HFT, skip below to section "G. Read the BOS README File."
2. Enter `export TERM=xxx`
(where `xxx` is your display name.)
3. Enter `chdev -a term=xxx -l zzz`
(where `xxx` is your display name and `zzz` is the tty device you are using.)

F. Setting Up an ASCII Terminal

1. If you are using a non-English locale (language), do the following:
 - Enter `ls /etc/nls/termmap` to list the available input and output map files.
 - Enter `setmaps -t mapfile` where `mapfile` is from the termmap listing.
 - Enter `chdev -l ttyzzz -a imap=mapfile -a omap=mapfile` where `zzz` is the tty device you are using and `mapfile` is from this termmap listing.

G. Read the BOS README File

Enter `pg /usr/lpp/bos/README` to read the "Installation" part of the BOS README file.

H. Set the Date and Time

1. Enter `date` to check the system date.
2. If the date is not correct, execute `smit chtz` to change the date.

I. Reconfiguring Your Network Software

If your system is connected to a network, execute `smit mktcpip` to reconfigure TCP/IP.

J. mksysb Installation Troubleshooting and Error Messages

For troubleshooting tips and a discussion of configuration and setup error messages, refer to page 3-36.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **backup** command, **pax** command, **smit** command, **sysck** command, **restore** command, and **ls** command.

The Backup Overview in *System Management Guide* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *System Management Guide* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *System Management Guide* provides information on mounting files and directories, mount points, and automatic mounts.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

Chapter 4. BOS Installation from a Network

This chapter contains the procedures for installing the Version 3.2 Base Operating System (BOS) from a Network Installation Server. This chapter includes the following sections:

- Choosing between a New Installation, a Preservation Installation, and a Complete Overwrite Installation 4-2
- Flow Chart for BOS Installation from a Network 4-3
- Prerequisite Tasks and Conditions 4-4
- Installation Procedure 4-6
- Advanced Path: BOS Installation from a Network 4-50
- Related Information 4-54

Choosing between a New Installation, a Preservation Installation, and a Complete Overwrite Installation

The chapter explains three different methods for installing BOS: New Installation, Preservation Installation, and Complete Overwrite Installation. The instructions are combined in one procedure because the three types of installation are very similar. The differences in the procedures will be pointed out where they occur.

A *volume group* is one disk or a group of hard disks on your system. A *root volume group* is a group of hard disks in which the root portion of BOS is stored. This means that a root volume group can be used to boot (start up) your system. It is possible to have multiple root volume groups, but only one is necessary.

1. *New Installation* is performed when the hard disk or disks you are installing BOS onto are *empty*. A hard disk is empty if it does not contain any data or if it contains some data, but it does not contain a root volume group (it is not bootable).
2. *Preservation Installation* installs the Version 3.2 Base Operating System (BOS) and preserves the existing root volume group on your system. This method only overwrites the *usr (/usr)*, temporary (*/tmp*), */var*, and root (*/*) file systems of the previously installed version. Use this installation procedure when a previous version of BOS is installed on your system, and you want to preserve the root volume group, including your system configuration.

A Preservation Installation will automatically preserve only some of the data on your system (the contents of the root volume group). It will still be necessary for you to use the Upgrade Utilities or the System Management Interface Tool (SMIT) to finish restoring all of your system data.

3. *Complete Overwrite Installation* is used when a previous version of BOS is installed on your system, and you want to completely overwrite the existing version of BOS. This procedure may impair recovery of data or destroy all existing data on your hard drives.

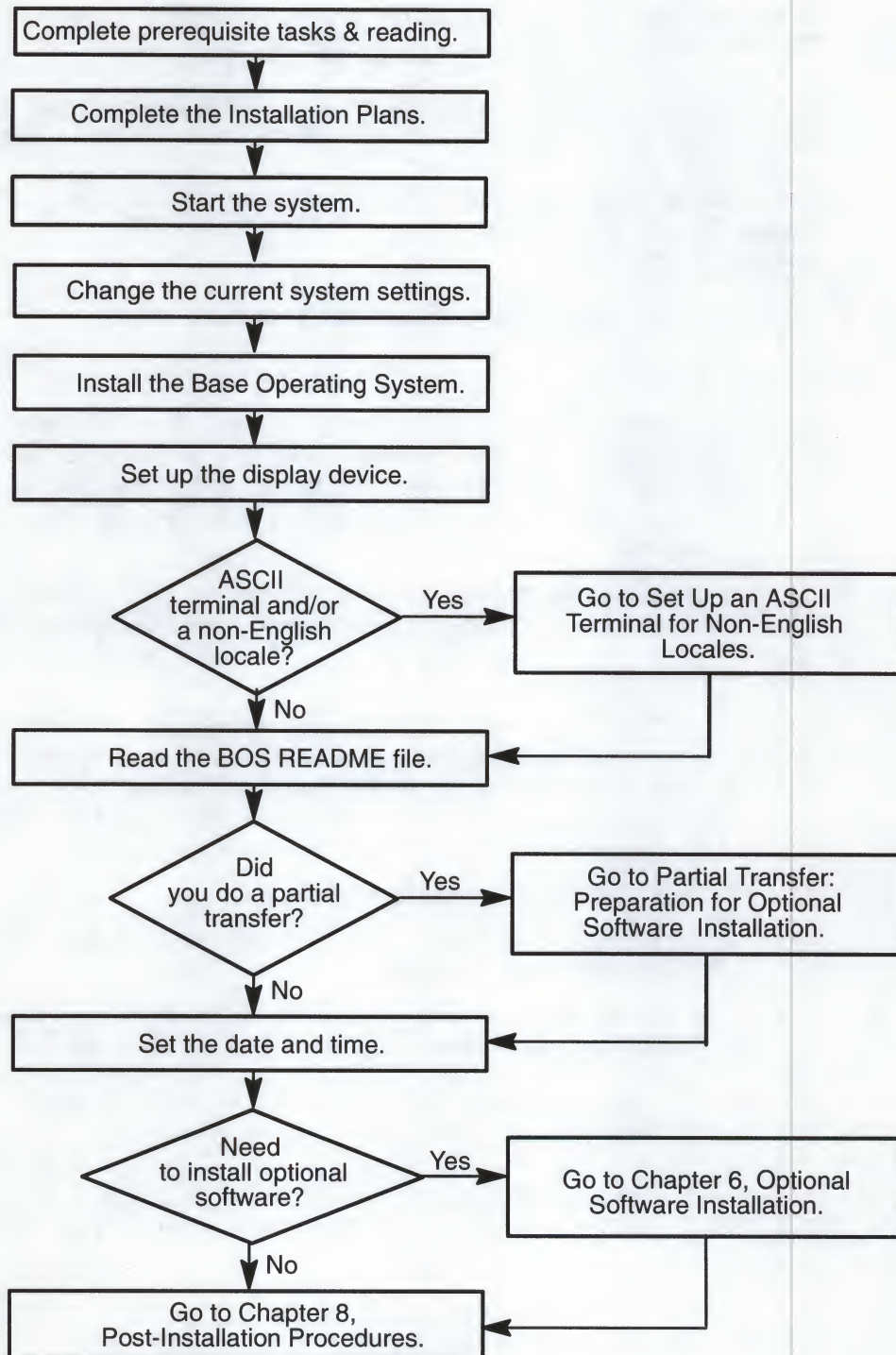
Use Complete Overwrite when:

- You want to install onto disks that contain an existing root volume group, but you want to completely overwrite the root volume group. For example, this might occur if your root volume group has become corrupted.
- You want to reassign your hard disks. For example, you have four hard disks and they all belong to one root volume group and you want to separate the disks into two volume groups. First do a Complete Overwrite Installation and select the first two disks as the installation destination. These two disks become the root volume group. You then use SMIT to combine the remaining two disks into a second (nonroot) volume group. The result is two separate volume groups. All of the operating system files are in the root volume group and you can store user data in the second volume group. When the operating system is updated or reinstalled, the user's data is unaffected.

Warning: The Complete Overwrite procedure overwrites the selected destination disks. This means that after the installation is complete, you will have to manually configure your system using SMIT or the command line. If you want to preserve your system configuration and you do *not* need to completely overwrite your root volume group, do *not* use Complete Overwrite. Instead, use the Preservation Installation procedure described in this chapter.

Flow Chart for BOS Installation from a Network

This flow chart outlines the basic steps you must perform to install the Version 3.2 Base Operating System from a Network Installation Server.



Prerequisite Tasks and Conditions

1. Before using the procedures in this chapter, you must first create a network installation server as described in "Chapter 9. Creating an Installation Server."
2. All hardware must already be installed, including any external devices, such as tape and CD-ROM drives, and all necessary microcode.
3. You should be familiar with the procedures for operating your hardware. If you are not, read "Chapter 18. Hardware Basics." Then, return here and continue with the next step.
4. In this chapter, you will be using the System Management Interface Tool (SMIT). If you are not familiar with SMIT, read "Chapter 19. SMIT Basics." Then, return here and continue with the next step.
5. Locate the key for the key lock on your system unit.
6. Locate your *boot* media.

Note: If you will be pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must boot your system from a tape or from diskettes that has been created on a system that has the FDDI software installed and all associated service updates either applied or committed.

If necessary, use the **lslpp** command to see if the FDDI service updates have been applied or committed on your system. To do this, type the following:

```
lslpp -h
```

and press Enter.

Check the screen listing to see if the FDDI service updates have been applied or committed. If they have not, refer to the documentation that accompanied your installation media for information about how to install the FDDI service updates. Once they have been installed, return here and continue.

For more information, refer to the following articles:

- For instructions on how to create BOSboot diskettes, refer to "Chapter 11. Creating BOSboot Diskettes "
- For instructions on how to create a backup image, refer to "Chapter 15. Backing Up Your System."

CD-ROM

Do the following only if you are booting from CD-ROM:
Find the AIX/6000 Version 3.2 BOS CD-ROM.

Tape

Do the following only if you are booting from tape:
Find the Version 3.2 BOS tape you want to use to boot the system.

Diskette

Do the following only if you are booting from diskettes.

Find the following Version 3.2 BOS diskettes that you want to use to boot your system:

- Boot diskette
- Display diskette
- Install/Maintenance diskette
- Display Extensions diskette (if necessary)

If you are using a display adapter card, be sure that you have the display diskette from that manufacturer.

Note: If you are not sure whether you have a display adapter installed, consult the “About Your Machine” document that was shipped with your system. It contains a list of the factory hardware shipped with your system.

Also, if you are pulling the installation image from a network server over a Fiber Distributed Data Interface (FDDI) network, you will need the Communications Extensions diskette.

7. If you are doing a New Installation, skip to the next section, “The Installation Procedure.”

If you are doing a Preservation Installation or Complete Overwrite Installation, it is recommended that you locate or create a backup of your system before you begin the installation. To do this, go to “Chapter 15. Backing Up Your System” and then return here and continue with the next section, “Installation Procedure.”

Installation Procedure

This chapter contains instructions for the following sections:

- A. Complete the BOS Installation Plan
- B. Start the System
- C. New or Complete Overwrite: Change the Current System Settings
- D. Preservation: Change the Current System Settings
- E. Install the Version 3.2 Base Operating System (BOS)
- F. Set up the Display Device
- G. Setting Up an ASCII Terminal
- H. Read the BOS README File
- I. Partial Transfer: Preparations for Optional Software Installation
- J. Set the Date and Time
- K. BOS Installation Completion Procedures.

Continue with the next section when you are ready to begin the installation.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin with the next section, "A. Complete the BOS Installation Plan." This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of BOS and only need a minimal set of instructions, you can skip to page 4-50 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin with the next section.

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning Your Installation" and complete the BOS Installation Plan. Then return here and continue with the next section, "B. Start the System."

B. Start the System

1. If your system is turned OFF, go to step 2.
If your system is already turned ON, use the following procedures to shut it down.

- a. If you are not already logged in as root, log in as root now.
- b. Type the following:

```
shutdown
```

and press Enter.

The shutdown process is complete when the following message is displayed:

```
Halt completed ...
```

Note: On some models (such as the RISC System/6000 580, 950, 970, and 980), the **shutdown** command turns off the power to the system unit. It does not, however, automatically flip the power switch to the OFF position.

- c. When the shutdown process is complete, flip the system unit power switch to the OFF position. Do not turn your system unit back on until you get to step 5.

Note: If the **shutdown** command turned off the system unit, you still need to flip the power switch to the OFF position.

2. Depending on the system unit, do one of the following:
 - If your system is a RISC System/6000 model 580, 950, 970, or 980, turn the system key to the SERVICE position.
 - If your system is *not* one of these models, turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, CD-ROM drives, tape drives, monitors, and external disk drives.

Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

4. If you are not using an ASCII terminal, skip to step 5.
If you are using an ASCII terminal, set the terminal's communications options as follows:

- Line Speed (baud rate) = 9600
- Word Length (bits per character) = 8
- Parity = no (none)
- Number of Stop Bits = 1
- Interface = RS-232C (or RS-422A)
- Line Control = IPRTS

It is also recommended that you set the terminal's keyboard and display options as follows:

- Screen = normal
- Row and Column = 24x80
- Scroll = jump
- Auto LF (line feed) = off
- Line Wrap = on
- Forcing Insert = line (or both)
- Tab = field
- Operating Mode = echo
- Turnaround Character = CR
- Enter = return
- Return = new line
- New Line = CR
- Send = page
- Insert Character = space

Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the onscreen instructions to set these options. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set these options. Please note that some non-IBM terminals may have different option names and settings than those listed here.

5. Flip the system unit power switch to the ON position.
6. Depending on the system unit, do one of the following:
- If your system is *not* a RISC System/6000 model 580, 950, 970, or 980, skip to step 7.
 - If your system is a RISC System/6000 model 580, 950, 970, or 980, do the following:
 - a. Wait three seconds.
 - b. Turn the system key to the SECURE position.
7. After several minutes, the 200 code will appear on the three-digit LED display on the system unit.

Note: On some systems, you may have to flip open a plastic door to see the three-digit LED display.

8. Depending on the type of media you are using to boot (start) the system, do the following:

| | |
|----------|---|
| CD-ROM | Insert the AIX/6000 Version 3.2 BOS CD-ROM into a disc caddy and insert the caddy into your CD-ROM drive. Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it. |
| Tape | Insert the Version 3.2 BOS tape you want to use to boot the system into the tape drive. Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens. |
| Diskette | Insert the Version 3.2 BOS Boot diskette into the diskette drive. Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes. |

9. If the system key is not already turned to the SERVICE position, turn it to the SERVICE position now.

10. Press the yellow system RESET button twice in quick succession.

Note: On some systems, a Main Menu or Select Language screen may appear. If the Main Menu appears, follow the onscreen instructions to select the Exit Main Menu & Start System (boot) option. If the Select Language screen appears, follow the onscreen instructions to return to the Main Menu and select the Exit Main Menu & Start System (boot) option.

11. Your system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.

| | |
|----------|--|
| CD-ROM | If you are installing from CD-ROM, go to step 14. |
| Tape | If you are installing from tape, go to step 14. |
| Diskette | If your system has one of the following display adapters installed, go to step 12. Otherwise, go to step 13. |

Note: If you ordered an adapter with your system, the adapter name will be listed on your "About Your Machine" document as one of the following:

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any other IBM graphics adapter.

If your system does *not* have one of the above adapters installed, go to step 13.

12. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).

Note: When c07 appears the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette from the drive and insert the BOS Display diskette.

Continue with step 14.

13. When the c07 code appears on your three-digit LED system display, remove the diskette from the drive and insert the BOS Display diskette.

Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 12.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

14. The screen may stay blank for several minutes. Then, c31 will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.

Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

Press the specified keys only on the console that you want to use as your system console.

| | |
|----------|----------------|
| CD-ROM | Go to step 16. |
| Tape | Go to step 16. |
| Diskette | Go to step 15. |

15. A message similar to the following displays:

Insert BOS Install/Maint Diskette and Press Enter.

When you see this message, remove the Display diskette, insert the BOS Install/Maintenance diskette, and press Enter.

Note: Depending on your system, you may be prompted for Volume 2 of the Install/Maintenance diskette. If you are, remove Volume 1 from the diskette drive, insert Volume 2, and press Enter.

16. A series of messages is displayed. This may take several minutes.

Note: If you are booting from tape, it is normal for the system to move the tape back and forth during this period.

A screen similar to the following displays:

AIX 3.2 INSTALLATION AND MAINTENANCE

Select the number of the task you want to perform.

>>> 1 Install AIX.
2 Install a system that was created with the SMIT "Backup the System" function or the "mksysb" command.
3 Install this system for use with a "/usr" server.
4 Start a limited function maintenance shell.

Type the number for your selection, then press "Enter": 1

Note: The >>> (arrows) on this menu indicate the default selection. During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.

CD-ROM Continue with step 17.

Tape Continue with step 17.

Diskette Remove the BOS Install/Maintenance diskette from the diskette drive. Then continue with step 17.

17. Press Enter to select **Install AIX**.

18. If you are doing a New Installation, go to section "C. New or Complete Overwrite: Change the Current System Settings" on page 4-13.

If you are doing a Preservation or Complete Overwrite Installation, a screen similar to the following displays:

METHOD OF INSTALL

Select the number of the type of installation you want to perform

>>> 1 **PRESERVATION INSTALL**
Preserves SOME of the data on the destination hard disk.
Only overwrites the usr (/usr), temporary (/tmp), and root (/) file systems of the previously installed version AIX.

2 **COMPLETE OVERWRITE INSTALL**
May overwrite EVERYTHING on the destination hard disk.
- If the destination disk is totally empty, select 2.
- If AIX is already installed on the destination hard disk but there is nothing on the disk that you want to preserve, select 2.

99 Return to previous menu

Type the number for your selection, then press Enter: 1

19. Select the method of install that you want to use by typing the appropriate number and then press Enter. The Current System Settings screen will then appear.

If you are doing a Preservation Installation, go to "D. Preservation: Change the Current System Settings" on page 4-21.

If you are doing a Complete Overwrite Installation, go to the next section, "C. New or Complete Overwrite: Change the Current System Settings," beginning on the next page.

C. New or Complete Overwrite: Change the Current System Settings

Note: Do *not* select 0 on the following Current Systems Settings screen until after you have read all of the instructions in this section.

A screen similar to the following displays:

| CURRENT SYSTEM SETTINGS | |
|--|------------------------|
| This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct, type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter. | |
| | CURRENT CHOICE |
| 1 LOCALE (language) | C (POSIX) |
| 2 INPUT Installation Device | 150 mb Tape: /dev/rmt0 |
| 3 DESTINATION Disks | 00-01-00-00 |
| 4 STARTUP (Boot) Device | 00-01-00-00 |
| 99 Return to previous menu | |
| 0 Install the AIX base operating system with the current settings | |
| Type the number for your selection, then press Enter: 0 | |

Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must change the Input Installation Device and then specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure.

If you do not need to change the locale, go to the next section, "Input Installation Device," on page 4-15.

PROCEDURE:

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following displays:

CHANGE LOCALE

Select the number for the language/locale.

| | | | |
|----------------------------|----------------------|----|---------------------------|
| >>> 1 | C (POSIX) | 16 | Icelandic |
| 2 | Chinese (Taiwan) | 17 | Italian |
| 3 | Danish | 18 | Japanese |
| 4 | Dutch (Belgium) | 19 | Korean |
| 5 | Dutch | 20 | Norwegian |
| 6 | English (UK) | 21 | Portuguese |
| 7 | English (US) | 22 | Spanish |
| 8 | Finnish | 23 | Swedish |
| 9 | French (Belgium) | 24 | Turkish (qwerty keyboard) |
| 10 | French (Canada) | 25 | Turkish (fggiod keyboard) |
| 11 | French (Switzerland) | | |
| 12 | French (France) | | |
| 13 | German (Switzerland) | | |
| 14 | German | | |
| 15 | Greek | | |
| 99 Return to previous menu | | | |

Type the number for your selection then press ENTER: 1

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

The language you select will be automatically installed during BOS installation.

Note: Changes to the locale (language) do not take effect until after BOS is installed and your system is rebooted. The Latin-1 countries (U. S., Canada, western Europe) and Japan are supported by two code sets. The default code set is the same code set that you were using in Version 3.1.x. After software installation is completed, users who want to change their language environment or code set should consult the following articles:

- "Understanding Locale" in the *System Management Guide*.
- "How to Change Your Locale" in the *System Management Guide*.
- "Understanding Code Set Strategy" in the *Kernel Extensions and Device Support Programming Concepts*.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

During optional software installation, make sure you select for installation any additional locales (languages) that you want to install.

Go to the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must change the Input Installation Device and then specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

If you need to change the input installation device continue with the following procedure. Even if the correct network device is already set, it is recommended that you do the following procedure to make sure that the network address settings are correct.

Note: Booting from diskette and installing from CD-ROM is not supported.
If you booted from diskette, the CD-ROM drive is not listed on Change Input Installation Device menu.

PROCEDURE:

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following displays:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|-----------|---------------|
| 1 | Diskette: | /dev/fd0 | 00-00-0D-00 |
| 2 | 8mm Tape: | /dev/rmt0 | 00-08-00-30 |
| >>> 3 | CD-ROM: | /dev/cd0 | 00-08-00-40 |
| 4 | Token-Ring: | /dev/tr0 | 00-00 |
| 5 | Token-Ring: | /dev/tr1 | 00-01 |
| 6 | Standard Ethernet: | /dev/en0 | 00-02 |
| 7 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 8 | Standard Ethernet | /dev/en1 | 00-03: |
| 9 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. Type the number for the device supplying the software you want to install and press Enter. For example, to select a Standard Ethernet network interface as shown in the previous screen, type 6 and press Enter.

Note: If you booted from diskette and selected FDDI as the network device, you will be prompted to insert the Communications Extensions diskette. When you see the following message:

Insert Communications Extensions Diskette . . . Press Enter

Remove the BOS Install/Maintenance diskette, insert the Communications Extensions diskette in the floppy drive, and then press Enter.

A screen similar to the following displays:

| ENTER NETWORK PARAMETERS | | |
|--|---|-----------------|
| Enter the network parameters that will allow this machine to access the network install server over the en0 network interface. | | |
| 1 | Client address: (Network address of this machine.) | 11.11.11.11 |
| 2 | Server address: (Network address of the network install server.) | 11.111.111.111 |
| 3 | Gateway address: (Optional, required if network is on a subnet.) | |
| 4 | Subnet mask: (Optional, required if network is on a subnet.) | 444.444.444.444 |
| 5 | Ethernet connection type: (bnc or 15 pin d-type) | 15 pin d-type |
| 99 | Return to previous menu | |
| 0 | Commit current network settings and return to Settings Menu | |
| Type the number for your selection, then press "Enter": 0 | | |

If all of the information on the screen is already set correctly, skip to step 12. Otherwise, continue with step 3.

Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

3. Type the following:

1

and press Enter.

The cursor is at the entry field for Client IP Address.

4. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

5. Type the following:

2

and press Enter.

The cursor is at the entry field for Server IP Address.

6. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

7. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

8. If you are *not* using a gateway, press Enter.

If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

9. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

10. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

11. If you are using a FDDI network, skip to step 12.

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.

Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

12. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Destination Disk," beginning on the next page.

Destination Disk

This section describes how to change the hard disk or disks where the Base Operating System will be installed. The location codes of the hard disks are displayed on the CHANGE DESTINATION HARD DISK(S) screen in the LOCATION column. The format for the location code for a direct-attached disk is: AA-BB where AA is 00 (zero) and BB is the slot number for the hard disk. The format for the location codes for all other hard disks is described under Vital Product Data and Location Codes in *POWERstation and POWERserver Common Diagnostics and Service Guide (SA23-2687)*.

Warning: It is extremely important that you install to the correct destination since all of the existing data on the destination disk will be destroyed.

If you need to change the destination disk or disks, continue with the following procedure. If you do not need to change the destination disk, go to the next section, "Startup (Boot) Disk," on page 4-20.

PROCEDURE

1. To select **DESTINATION Disks** at the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following displays:

CHANGE DESTINATION HARD DISK(S)

Select the Destination Hard Disks. At least one bootable disk must be selected. If necessary, more than one hard disk may be selected. To cancel a selection, enter the number a second time. Current selection is indicated by >>>.

| | LOCATION | SIZE(MB) | VOLUME GROUP ID | BOOTABLE DISK |
|-------|-------------|----------|------------------|---------------|
| >>> 1 | 00-07-00-00 | 320 | 00014099342d572c | Yes |
| >>> 2 | 00-07-00-10 | 320 | 00014099342d572c | No |

99 Return to previous menu
0 Commit current selection and return to Settings Menu

Type the number for your selection, then press Enter: 0

Note: On the Change Destination Hard Disk(s) menu, the greater-than signs (>>>) indicate that the first seven disks in the listing have been preselected for you. You must deselect any preselected hard disks that you do not want to use as a destination disk.

2. To select or deselect a hard disk, type the disk's menu number and press Enter.
 - If the disk was previously selected, the greater-than signs (>>>) disappear from the menu indicating that the disk has been deselected.
 - If the disk was previously not selected, the greater-than signs (>>>) appear to the left of the disk indicating that it is now selected.
3. Continue selecting and deselecting hard disks as required. You can select multiple hard disks as the destination of the AIX Base Operating System (BOS). When you are finished, go to the next step.
4. When you have finished selecting and deselecting the destination hard disks, type the following:
0
and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Startup (Boot) Disk."

Startup (Boot) Disk

This section describes how to select the hard disk within the group of destination disks that will contain the startup (boot) image. This is the hard disk that will be used to start your system after BOS is successfully installed and you reboot the system.

PROCEDURE

1. To select **STARTUP (Boot) Disk** at the Current System Settings menu, type the following:

4

and press Enter.

A screen similar to the following displays:

CHANGE STARTUP DISK

Choose the ID# of the startup (boot) disk.

STARTUP DISK

>>> 1 00-01-00-00

99 Return to previous menu

Type the number for your selection, then press Enter: 0

2. Type the number for the disk on which you want your startup (boot) image to reside, and press Enter.
3. When you have finished, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

4. Go to section "E. Install the Base Operating System" beginning on page 4-27.

D. Preservation: Change the Current System Settings

Note: Do *not* select **0** on the Current Systems Settings screen until after you have read all of the instructions in this section.

A screen similar to the following displays:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct, type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter.

| | CURRENT CHOICE |
|---|------------------------|
| 1 LOCALE (language) | C (POSIX) |
| 2 INPUT Installation Device | 150 mb Tape: /dev/rmt0 |
| 3 DESTINATION Disks | 00-01-00-00 |
| 4 STARTUP (Boot) Device | 00-01-00-00 |
| 99 Return to previous menu | |
| 0 Install the AIX base operating system with the current settings | |

Type the number for your selection, then press Enter: 0

Warning: You must change the current system settings when updating from Version 3.1 to 3.2 *because the default settings will always be incorrect.*

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must change the Input Installation Device and then specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure.

If you do not need to change the locale, go to the next section, "Input Installation Device," on page 4-23.

PROCEDURE

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following displays:

CHANGE LOCALE

Select the number for the language/locale.

| | | |
|-----|-------------------------|---------------|
| >>> | 1 C (POSIX) | 16 Italian |
| | 2 Danish | 17 Japanese |
| | 3 Dutch (Belgium) | 18 Norwegian |
| | 4 Dutch | 19 Portuguese |
| | 5 English (UK) | 20 Spanish |
| | 6 English (US) | 21 Swedish |
| | 7 Finnish | 22 Turkish |
| | 8 French (Belgium) | |
| | 9 French (Canada) | |
| | 10 French (France) | |
| | 11 French (Switzerland) | |
| | 12 German (Switzerland) | |
| | 13 German | |
| | 14 Greek | |
| | 15 Icelandic | |

99 Return to previous menu

Type the number for your selection then press Enter: 1

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

The language you select will be automatically installed during BOS installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Note: Changes to the locale (language) do not take effect until after BOS is installed and your system is rebooted. The Latin-1 countries (U. S., Canada, western Europe) and Japan are supported by two code sets. The default code set is the same code set that you were using in Version 3.1.x. After software installation is completed, users who want to change their language environment or code set should consult the following articles:

- "Understanding Locale" in the *System Management Guide*.
- "How to Change Your Locale" in the *System Management Guide*.
- "Understanding Code Set Strategy" in the *Kernel Extensions and Device Support Programming Concepts*.

During optional software installation, make sure and select for installation any additional locales (languages) that you want to install.

Go to the next section, "Input Installation Device," beginning on the next page.

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.

Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device continue with the following procedure. Even if the correct network device is already set, it is recommended that you do the following procedure to make sure that the network address settings are correct.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must change the Input Installation Device and then specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

PROCEDURE:

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following displays:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|-----------|---------------|
| 1 | Diskette: | /dev/fd0 | 00-00-0D-00 |
| 2 | 8mm Tape: | /dev/rmt0 | 00-08-00-30 |
| 3 | CD-ROM: | /dev/cd0 | 00-08-00-40 |
| 4 | Token-Ring: | /dev/tr0 | 00-00 |
| 5 | Token-Ring: | /dev/tr1 | 00-01 |
| >>> 6 | Standard Ethernet: | /dev/en0 | 00-02 |
| 7 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 8 | Standard Ethernet | /dev/en1 | 00-03: |
| 9 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. Type the number for the device supplying the software you want to install and press Enter. For example, to select a Standard Ethernet network interface as shown in the previous screen, type 6 and press Enter.

Note: If you booted from diskette and selected FDDI as the network device, you will be prompted to insert the Communications Extensions diskette. When you see the following message:

Insert Communications Extensions Diskette . . . Press Enter

Remove the BOS Install/Maintenance diskette, insert the Communications Extensions diskette in the floppy drive, and then press Enter.

A screen similar to the following displays:

| ENTER NETWORK PARAMETERS | | |
|--|---|-----------------|
| Enter the network parameters that will allow this machine to access the network install server over the en0 network interface. | | |
| 1 | Client address: (Network address of this machine.) | 11.11.11.11 |
| 2 | Server address: (Network address of the network install server.) | 11.111.111.111 |
| 3 | Gateway address: (Optional, required if network is on a subnet.) | |
| 4 | Subnet mask: (Optional, required if network is on a subnet.) | 444.444.444.444 |
| 5 | Ethernet connection type: (bnc or 15 pin d-type) | 15 pin d-type |
| | | |
| 99 | Return to previous menu | |
| 0 | Commit current network settings and return to Settings Menu | |
| Type the number for your selection, then press "Enter": 0 | | |

If all of the information on the screen is already set correctly, skip to step 12. Otherwise continue with step 3.

Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

3. Type the following:

1

and press Enter.

The cursor is at the entry field for client IP Address.

4. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

5. Type the following:

2

and press Enter.

The cursor is at the entry field for server IP Address.

6. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

7. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

8. If you are *not* using a gateway, press Enter.

If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

9. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

10. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

11. If you are using a FDDI network, skip to step 12.

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.

Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

12. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Destination Root Volume Group," on the next page.

Destination Root Volume Group

This setting specifies the hard disk or disks where you want BOS to be installed. A *volume group* is a single hard disk or a group of hard disks. A *root volume group* is a group of hard disks that contains boot files so that it can be used to start (boot) the system. It is possible to have more than one root volume group on your system. This procedure describes how to select the root volume group that will be the destination for the new version of BOS that you are installing.

Warning: It is extremely important that you select the correct root volume group since some of the existing data in the destination root volume group will be destroyed during BOS install.

PROCEDURE

1. To select **DESTINATION root VG** from the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following displays:

CHANGE DESTINATION ROOT VOLUME GROUP

Select the number of the Destination Root Volume Group (RVG).

|< ————— hard disks in group —————>|

| ROOT VOLUME GROUP | LOCATION | SZ | LOCATION | SZ | LOCATION | SZ |
|--------------------|-------------|-----|----------|----|----------|----|
| 1. 000000088158089 | 00-01-00-00 | 320 | | | | |
| 2. 000000077122013 | 00-01-00-10 | 320 | | | | |

99 Return to previous menu

Type the number(s) for your selection, then press Enter: 1

2. Consult your BOS Installation Plan for the identification number of your destination root volume group. Type the menu number for the destination root volume group and press Enter. For example, to select **ROOT VOLUME GROUP 000000088158089**, as shown in the example screen above, you would type 1 and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Go to the next section, "E. Install the Base Operating System," beginning on the next page.

E. Install the Base Operating System

When you have finished setting all of the values on the Current System Settings menu, you can instruct the system to begin installing Version 3.2 of the Base Operating System (BOS).

1. To select **Install the AIX Base Operating System with the current settings** at the Current System Settings menu, type the following:

0

and press Enter.

A screen similar to the following displays:

FINAL WARNING

Select the number of the desired action

Base Operating System installation will destroy all data in the root (/) and user (/usr) file systems of the selected root volume group.

99 Return to Previous Menu
0 Continue with Install

Type the number for your selection, then press Enter.

2. To begin installing the system, type the following:

0

and press Enter.

3. In a few seconds, the word `netinstall` displays, followed by a message similar to the following:

`contacting server.....`

The network is being configured and the client machine is contacting the installation server and requesting the Network Install File Selection menu.

Note: If the installation server cannot be contacted, a system message displays and the Current System Settings menu appears. Reselect item **2 INPUT Installation Device** and see if your adapter and addresses are set correctly. If these items are correct, contact your network administrator.

4. When the installation server has been contacted, the Network Install File Selection menu displays software available for installation. From this menu, you select the software you want to install.

NETWORK INSTALL FILE SELECTION

- 77. Previous screen
- 88. Next screen
- 99. Return to CHANGE SETTINGS menu
- 0. Continue with Network Install

This menu shows the software that is available from your installation server for installation on your (client) system.

- *Full network transfer* – all of the software that you want to install is first copied (transferred) from the server to your client's hard disk. The software is then installed using your client's hard disk as the installation device. This is the simpler method, but it uses more disk space since a copy of each installation image must be stored on your own system's hard disk.
- *Partial network transfer* – only part of the software you want to install is copied to your system's hard disk. This software is installed and then you remotely mount your system to the server's file system and do a second install using the directory on your server's hard disk as your installation device. This is a more complex method, but it saves disk space on your client system.

- To perform a *full network transfer*, go to step 5.
- To perform a *partial network transfer*, go to step 6.

5. To perform a *full network transfer*, enter the menu ID numbers for *all* the software you want to install (explanations of the filenames are contained in "Chapter 17. Product Information"). Type the numbers on a single line separating each entry with a space.

Select one copy of the Base Operating System (**bos.obj**), **bos.data**, **bsl**, **bsmLanguage**, and *all* of the optional software you want to install. For example, if you were using the sample menu you might type 1 2 3 4 5 6 7. (Please note that these may not be the correct numbers for your menu. Get the numbers from the menu on your display – not from the example given here.)

Note: If you are using a Fiber Distributed Data Interface (FDDI) network, you must also select the FDDI software option (**fddi.obj**) and the FDDI microcode option (**fddi.mc**).

When you select an option >>> (arrows) will appear next to the option. You can cancel a selection by reentering the option's selection number.

Note that the list of selections may continue over several screens. If it does, use the following keys to move forward and backward among screens:

- To move to the next screen, type 88 and press Enter.
- To move to the previous screen, type 77 and press Enter.

When you are done typing the numbers for your selections, go to step 7.

6. To perform a *partial network transfer*, type just the menu ID numbers for the following options on a single line separating each entry with a space. Select only software from the following list. The * (asterisk) indicates that prefixes and suffixes may appear in the names on your menu.

/bos.obj The Base Operating System obj and data options.

bos.data* or *bos.shr

Depending on the type of installation you are performing, this file is listed in the menu as either **bos.data** or **bos.shr**.

bosnet Network communications software – this contains TCP/IP and NFS.

bsl The Base System Locales software contains information that defines language environment, fonts, and keyboard maps for your system. For example, **bsl.en_US.pc.loc** contains the U.S. English pc code set locale.

bsmLanguage

The Base System Messages software, where *Language* is your primary language. This specifies the language that will be used for the system messages. For example, **bsmEn_US** contains the BOS system messages in English (United States).

Note: If you do not select a Base System Locale and a Base System Messages option for installation, the system defaults to C POSIX.

Note: If you are using a Fiber Distributed Data Interface (FDDI) network, you must also select the FDDI software option (**fddi.obj**) and the FDDI microcode option (**fddi.mc**).

For example, in the Network Install File Selection menu, these options appear in the menu as items one, two, three, four, and five. Therefore, if your menu looked like the sample menu, you would only type 1 2 3 4 5 and press Enter. However, since these options may have different numbers on your menu, be sure to get the numbers from the menu on your display and not from the example given here.

When you select an option, >>> (arrows) will appear next to the option. You can cancel a selection by reentering the option's selection number.

Note that the list of selections may continue over several screens. If the menu displays on more than one screen, do the following to move forward and backward:

- To move to the next screen, type 88 and press Enter.
- To move to the previous screen, type 77 and press Enter.

When you are done typing the numbers for your selections, go to the next step.

7. Once all selections have been made, you are ready to begin the install process.

During the install process, if they are selected, only the Base Operating System (***/bos.obj***), your locale (***bsl***) and the system messages (***bsm***) will be installed on your client hard disk. The rest of the installation images for the optional software you selected will only be copied to your system's hard disk into the **/usr/sys/inst.images** directory. These optional software selections will *not* be installed now, they are only copied and stored in their installation images format. They will be installed later.

To begin the network installation, type 0 and press Enter.

8. As the system begins installing BOS (which will take a while), system messages will be displayed as the following activities occur:

- File systems are created.
- Files are restored.

Note: There are two error messages that may be displayed during BOS installation that you can ignore. The messages state that no software products were found and that no valid products were left to process. These messages are a normal part of the install process and are not indicative of any errors.

9. After the Base Operating System is installed and the selected optional software installation images are copied to your system, a screen similar to the following displays:

AIX Base Operating System installation is complete.
Please perform the following three steps to activate the
changes made during this installation.

1. Make sure your installation media (tape, diskette, etc.) has been removed from the input device.
2. Turn the system key to the NORMAL position.
3. Press Enter to restart (reboot) the system.

10. Remove the CD-ROM, tape, or diskette from the drive.

Tape If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

11. Turn the system key to the NORMAL position.

12. Press Enter to shutdown and reboot the system. System messages will appear as the system goes through the shutdown process. As the system reboots, the screen may go blank for a few minutes.

Note: If you are doing a Preservation Installation, the system may do a shutdown and a second boot to complete all of your locale (language environment) changes.

When the system completes the boot (startup) process, a login prompt displays on the console.

13. To log in to the system as root, type the following:

root

and press Enter.

A system prompt (#) appears.

Note: Although a message may appear on the screen instructing you to read the README files, it is not necessary to read those files now.

Your Base Operating System, locale, and system messages (if they were selected) are now installed.

However, any other selected optional software was only transferred, and will be installed in a later procedure.

Go to the next section, "F. Set Up the Display Device," beginning on page 4-32.

F. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.
2. To see which display name is stored in TERM, type the following:
(note that TERM is in capital letters)

```
echo $TERM
```

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

Possible responses to **echo \$TERM** command:

If TERM = `dumb`

This means that the system was unable to automatically recognize your display. You must manually set the display name. Go to step 3.

If TERM = `hft`

And you *are* using an hft such as a model 5081, 6091, or 8508, then go to the section titled "H. Read the BOS README File" on page 4-36.

If you are not using an hft, go to step 3.

If TERM = a specific model number

Such as `IBM3151` and the number is correct, go to the next section, "G. Setting Up an ASCII Terminal," beginning on page 4-34.

If the number is wrong, go to step 3.

3. Search the list below and see if your terminal type is in the list.

| | | | |
|----------------------|----------------------|--------------------|--------------------------|
| <code>hft</code> | <code>ibm5550</code> | <code>vt100</code> | <code>wyse60-316X</code> |
| <code>ibm3151</code> | <code>ibm5570</code> | <code>vt220</code> | <code>wyse60-316X</code> |
| <code>ibm3163</code> | | <code>vt320</code> | |
| <code>ibm3164</code> | | <code>vt330</code> | |

If your terminal type is in the previous list above, write down the name precisely as it appears in the list and go to step 6.

If your terminal type is not listed above, go to step 4.

4. Install the additional terminal information.
 - a. To install the additional terminal information (contained in **bos.data**), type the following:

```
installp -qaX -d /usr/sys/inst.images bos.data
```


and press Enter.
 - b. After the installation is finished, an installp summary is displayed. If **bos.data** was installed correctly, the Event column will show **APPLY** and the Result column will show **SUCCESS**.

5. Display names must be typed in a specific format.

- a. To see the terminfo list of the valid display names, type the following:
(where `x` is the first letter [not capitalized] of the name of the manufacturer or type of your display.)

```
ls /usr/share/lib/terminfo/x
```

For example, if you have an IBM display, you would type the following:

```
ls /usr/share/lib/terminfo/i (where i stands for IBM.)
```

and press Enter.

- b. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether the letters are capitalized. For example, for a model 3151 display, the list will show `ibm3151` as the correct display name.

6. Type the following:

```
export TERM=xxx (where xxx is the exact display name that you copied from the terminfo list.)
```

For example, if you are using a 3151, you would type

```
export TERM=ibm3151 and then press Enter.
```

and press Enter.

7. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 6 every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second `/` are the device name. In this example, it is `tty0` (where the last character in this example is a zero, not the letter `o`).

- b. Type the following:

```
chdev -a term=xxx -l zzz (where xxx is the display name you used in step 7 and zzz is the tty device name you found in step 8a.
```

Note: The `-l` in this command is a lowercase `"L"` and that `term` is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0 changed`.

Your terminal should now be set correctly. Continue with the next section, "G. Setting Up an ASCII Terminal."

G. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments).

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. In this case, go to the next section, "H. Read the BOS README File," on page 4-36.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE

1. To see which locale (language) is stored in the LANG variable, type the following:

```
echo $LANG
```

 (note that LANG is in capital letters.)

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

| | | | |
|-------|----|-------|-----------------|
| C | | | (POSIX) |
| en_GB | or | En_GB | (Great Britain) |
| en_JP | or | En_JP | (Japan) |
| en_US | or | En_US | (United States) |

YES: The system displayed one of the above locales, go to the next section, "H. Read the BOS README File," on page 4-36.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo \$LANG** command a *lowercase* letter?

YES: It's a *lowercase* letter, go to the next section, "H. Read the BOS README File," on page 4-36.

NO: It's an *uppercase* letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Make careful note of whether the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see which tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname of the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` are the numbers identifying your tty device.

7. To set the input and output map files, type the following:
(where `-l` is a lowercase "L," `x` is the number identifying your tty from step 6, and `mapfile` is the name you wrote down from the termmap listing in step 5.)

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type the following:
(where there are no spaces before the `"-C"` in this command.)

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "H. Read the BOS README File."

H. Read the BOS README File

A README file is an online document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the installation part of the BOS README file before you continue. This part of the README file will list any changes that you should make to the procedures in the rest of this chapter.

The following procedure contains instructions for viewing the BOS README file. As you read the README file, write any installation procedure corrections into this manual.

When you are done with the installation part of the README file, return to step 6 in this procedure.

Procedure for viewing BOS README:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

```
/2.Installation (Note: There are no blank spaces in this entry.)
```

and press Enter.

4. The installation notes appear.

To show the next page Press Enter.

To show the previous page Type -1 and Press Enter.

Read the notes and write any installation procedure corrections into this manual.

5. When you are finished with the installation part of the README, type the following at the colon (:) prompt:

```
q
```

and press Enter.

The system prompt (#) reappears.

6. Are you performing a partial network transfer?

YES: Continue with the next section, "I. Partial Transfer: Preparations for Optional Software Installation."

NO: I am performing a full network transfer. Go to "J. Set the Date and Time" on page 4-43.

I. Partial Transfer: Preparations for Optional Software Installation

Installing the Network Facilities

When you installed BOS, the server also transferred the "Network Facilities (BOSNET)" onto your system. This software must now be installed.

To install the Network Facilities, type the following:

```
installp -aqX -d /usr/sys/inst.images bosnet.all
```

and press Enter.

Note: If you are using a Fiber Distributed Data Interface (FDDI) network, you must install the FDDI software option (**fddi.obj**) and the FDDI microcode (**fddi.mc**) before configuring TCP/IP.

The network facilities are now installed. Continue with the next section, "Configuring TCP/IP."

Configuring TCP/IP

1. Complete the TCP/IP worksheet in "Chapter 16. Planning Your Installation" and return here and continue with the next step.

2. Type the following:

```
smit mktcpip (or smit -C mktcpip if you are working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

Available Network Interfaces

Move cursor to desired item and press Enter.

| | |
|-----|------------------------------|
| en0 | Ethernet Network Interface |
| et0 | IEEE 802.3 Network Interface |
| tr0 | Token-Ring Network Interface |

| | | |
|-----------|--------------|-------------|
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F8=Image | F10=Exit | Enter=Do |

This is a list of the available network interfaces that your system can use for network communications.

Note: The content of this list varies according to what is installed on your system.

3. Move the cursor to highlight the type of interface you are using for network communications and press Enter.

The Minimum Configuration & Startup screen will appear. The exact contents of this screen will depend on the type of network adapter you selected.

For example, if you selected the **Token-Ring Network Interface**, a screen similar to the following displays:

| Minimum Configuration & Startup | | | |
|---|------------|-----------|----------------|
| To delete existing configuration data, please use Further Configuration menus. | | | |
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| | | | [Entry Fields] |
| * HOSTNAME | | | [] |
| * Internet ADDRESS (dotted decimal) | | | [] |
| * Network MASK (dotted decimal) | | | [] |
| * Network INTERFACE | | | tr0 |
| NAMESERVER | | | |
| Internet ADDRESS (dotted decimal) | | | [] |
| Domain Name | | | [] |
| Default GATEWAY Address | | | [] |
| (dotted decimal or symbolic name) | | | |
| RING Speed | | | 4 |
| START TCP/IP daemons Now | | | no |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

4. Use the following procedures for all versions of the Minimum Configuration & Startup screen.

Note: Do *not* press Enter until you get to step 10.

Refer to your TCP/IP worksheet. Type the information from the worksheet to the following fields on the Minimum Configuration & Startup screen:

- HOSTNAME
- Internet ADDRESS
- Network MASK
- NAMESERVER Internet ADDRESS (if you have one)
- Domain Name
- Default GATEWAY Address (if you have one).

Note: Depending on your network configuration, you may not need to complete all of the entries on this screen.

5. Move the cursor to START TCP/IP daemons Now. Press the Tab key to change the default to yes.

6. You have the following choices:

- If you are using an Ethernet Network Interface, continue with step 7.
- If you are using a Token-Ring Network Interface, skip to step 8.
- If you are using a Fiber Distributed Data Interface (FDDI) network, skip to step 9.

7. If you need to change the setting for the type of cable you are using, do the following:

a. Move the cursor to the `Your CABLE Type` field.

Note: On some computers (such as the model 220) the Ethernet connection is built into the computer itself. If this is the case with your computer, make sure that the `Your Cable Type` field is set to `N/A` (for not applicable).

b. Press the Tab key to alternate between `N/A`, `bnc`, and `dix`.

c. Skip to step 9.

8. If you need to change the RING speed setting, do the following:

a. Move the cursor to the `RING Speed` field.

Warning: If you are using Token-Ring, an incorrect ring speed setting can totally disrupt network communications for all systems on the network.

b. Press the Tab key to alternate between the values 4 and 16.

c. Continue with step 9.

9. When you have finished making *all* your entries on the Minimum Configuration & Startup screen, confirm that the names and addresses are accurate.

- If you need to make corrections to your entries, use the Up/Down cursor keys to move to the entry you need to correct and type over the old entry.
- If your entries are correct, go to step 10.

10. To start the TCP/IP configuration process, press Enter.

11. A `COMMAND STATUS` screen appears. When the `Command: status` indicator changes to `OK`, press F10 to exit `SMIT`.

TCP/IP is now ready to use. Continue with the next section, "Update the Host List."

Update the Host List

A *nameserver* is a machine on your network that stores the names and addresses of all the network machines. When one machine wants to communicate with another, it sends that machine's name to the nameserver. The nameserver responds with the address of the machine name requested.

If you are using a nameserver for network communications, you do not need to perform this procedure. In this case, go to the next section, "Mounting the NFS Installation Images File System," beginning on page 4-41.

If you are *not* using a nameserver for network communications, you must update the hosts list to include the name of your network installation server.

1. To add the hostname of the network installation server, type the following:

```
smit mkhostent          (or smit -C mkhostent if you are working in
                        AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

Add a Host Name

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|--|--|
| * INTERNET ADDRESS (dotted decimal) * HOST NAME ALIAS(ES) (if any – separated by a blank space) COMMENT (if any – for the host entry) | [Entry Fields] [] [] [] [] |
|--|--|

| | | | |
|--------------------------------|--------------------------------------|----------------------------------|---------------------|
| F1=Help F5=Undo F9=Shell | F2=Refresh F6=Command F10=Exit | F3=Cancel F7=Edit Enter=Do | F4=List F8=Image |
|--------------------------------|--------------------------------------|----------------------------------|---------------------|

Note: Do *not* press Enter until you get to step 4.

2. INTERNET ADDRESS (dotted decimal) is highlighted.
Type the address of the network installation server.
3. Move the cursor to HOST NAME.
Type the name of the network installation server.
4. To add the host, press Enter.
5. Press F10 to exit SMIT.

Your system now knows the name of the network installation server. Continue with the next section, "Mounting the NFS Installation Images File System."

Mounting the NFS Installation Images File System

1. Type the following:

`smit mknfs` (or `smit -C mknfs` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| Start NFS | | | |
|---|--------------------------|-----------|----------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| * Start NFS now, on system restart or both | [Entry Fields] [both] | + | |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

2. To start NFS, press Enter.
3. A COMMAND STATUS screen appears. When the Command: status indicator changes to OK, press F10 to exit SMIT.
4. To mount the NFS file system from the server, type the following:

`smit mknfsmnt` (or `smit -C mknfsmnt` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| Add a File System for Mounting | | |
|---|----------------|-----------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | |
| [TOP] | [Entry Fields] | |
| * PATHNAME of mount point | [] | / |
| * PATHNAME of remote directory | [] | |
| * HOST where remote directory resides | [] | |
| Mount Type NAME | [] | |
| * Use SECURE mount option? | no | + |
| * MOUNT now, add entry to /etc/filesystems or both? | now | + |
| * /etc/filesystems entry will mount the directory on system RESTART. | no | + |
| * MODE for this NFS file system | read-write | + |
| * ATTEMPT mount in background or foreground | background | + |
| NUMBER of times to attempt mount | [] | # |
| Buffer SIZE for read | [] | # |
| Buffer SIZE for writes | [] | # |
| NFS TIMEOUT. In tenths of a second | [] | # |
| [MORE...19] | | |
| F1=Help | F2=Refresh | F3=Cancel |
| F5=Undo | F6=Command | F7=Edit |
| F9=Shell | F10=Exit | Enter=Do |
| | | F4=List |
| | | F8=Image |

Note: Do *not* press Enter until you get to step 9.

5. PATHNAME of mount point is highlighted.

Type the following:

/usr/sys/inst.images

Continue with step 6.

6. Move the cursor to PATHNAME of remote directory.
Type the name of the directory that holds the installation images on your network installation server.
7. Move the cursor to HOST where remote directory resides.
Type the hostname of your network installation server.
8. Use the default values for the remaining entries.
9. When you have finished making changes on this screen, press Enter.
10. A COMMAND STATUS screen appears. When the Command: changes to OK, press F10 to exit SMIT.

You have finished preparing your system for optional software installation. Continue with the next section, "J. Set the Date and Time," beginning on the next page.

J. Set the Date and Time

1. At the system prompt (#), type the following:

date

and press Enter.

The system displays the date and time.

Note: Time on your system is expressed in terms of a 24-hour clock, often called "military time." In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to next section, "K. BOS Installation Completion Tasks," on page 4-47.
- To change the date and time, go to step 2.

2. Type the following:

smit startup (or smit -C startup if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

SYSTEM STARTUP MENU

Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

Backup the System
System Environments
Install / Update Software
TCP/IP
NFS

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Select **System Environments** and press Enter. A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change Number of Virtual Terminals at Next System Restart
Change / Show Date, Time, and Time Zone
Change / Show Characteristics of Operating System
Manage Language Environment
Change Number of Licensed Users

4. Select **Change / Show Date, Time, and Time Zone** and press Enter. A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change / Show Date, Time, and Time Zone
Change Language Environment
Change Number of Licensed Users

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

Does this time zone go on
DAYLIGHT SAVINGS TIME?

1 yes
2 no

| | | |
|----------|------------|-----------|
| F1=Help | F2=Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to `yes` and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to `no` and press Enter.

A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

| | | |
|-------------|----------------------------|----------|
| [TOP] | | |
| (CUT0GDT) | Coordinated Universal Time | (CUT) |
| (TZ 1DT1) | Azures; Cape Verde | (CUT -1) |
| (TZ 2DT2) | Falkland Islands | (CUT -2) |
| (TZ 3DT3) | Greenland; East Brazil | (CUT -3) |
| (AST4ADT) | Central Brazil | (CUT -4) |
| (EST5EDT) | Eastern U.S.; Columbia | (CUT -5) |
| (CST6CDT) | Central U.S.; Honduras | (CUT -6) |
| [MORE...12] | | |

F1=Help
F8=Image
F2=Refresh
F10=Exit
F3=Cancel
Enter=Do

6. Move the cursor to highlight your time zone and press Enter. Use the Up and Down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following displays:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|--|---------------------------|
| Old time zone | [Entry Fields] CST6CDT |
| Time Zone | CST6CDT |
| Does this time zone go on daylight savings time? | yes |
| * YEAR (00-99) | [91] |
| * MONTH (01-12) | [04] |
| * DAY (01-31) | [15] |
| * HOUR (00-23) | [11] |
| * MINUTES (00-59) | [32] |
| * SECONDS (00-59) | [05] |

F1 = Help
F5 = Undo
F9 = Shell
F2 = Refresh
F6 = Command
F10=Exit
F3 = Cancel
F7=Edit
Enter=Do
F4 = List
F8 = Image

7. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following displays:

COMMAND STATUS

Command: OK stdout: yes stderr: no

Before completion, additional instructions may appear below

Mon Apr 15 11:32:05 CST 1991

Now exit SMIT and log out and then back in so that any changes to date,
time, and time zone will be reflected in your current session.

| | | | |
|----------|------------|-----------|------------|
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

8. Press F10 to exit SMIT.
 - If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Go to step 9.
 - If you did *not* change the time zone, you have finished setting the date and time. Go to step 11.
9. Use the following procedure to log off the system:

At the system prompt, type the following:

```
exit
```

and press Enter.

The login prompt is displayed. Continue with step 10.
10. To log back into the system, type the following:

```
root
```

and press Enter.
11. You have finished setting the date and time. Continue with the next section, "J. BOS Installation Completion Tasks."

K. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION

Go to the procedure titled "Preservation Installation: Restoring the `/etc/filesystems` File."

COMPLETE OVERWRITE

Go to the procedure "Complete Overwrite Installation: Importing Any Nonroot Volume Groups" on page 4-48.

NEW

Go to "Where Do I Go Next?" on page 4-49.

Preservation Installation: Restoring the `/etc/filesystems` File

If you are using the "Upgrade Utilities" to restore your configuration, skip this procedure and go to "Restoring Your SNA Configuration" on page 4-48.

If you are *not* using the "Upgrade Utilities," you need to perform the following procedure.

The preservation installation process saves your old `/etc/filesystems` into a file called `/etc/filesystems.old`. This file contains information on your file system's mount points and attributes. You must now copy this data back into the `/etc/filesystems` file and create the mount points for all the journaled file systems.

This procedure describes how to restore your `/etc/filesystems` file, create the mount points, and mount the directories.

PROCEDURE

1. Type the following:

```
cd /etc
```

and press Enter.

2. To create the mount points for all journaled file systems known to the system, type the following:

```
lsvg -o | xargs imfs
```

and press Enter.

3. To copy the old file system file, type the following:

```
cp filesystems.old filesystems
```

and press Enter.

4. To list the NFS file systems in the `/etc/filesystems` file, type the following:

```
lsfs -v nfs
```

and press Enter.

5. For *each* directory in the listing, type the following:

```
mkdir -p MountPoint
```

(where *MountPoint* is the name of each directory in the Mount Pt column.)

and press Enter.

6. To list the CD-ROM file systems in the `/etc/filesystems` file, type the following:

```
lsfs -v cdrfs
```

and press Enter.

7. For *each* directory in the listing, type the following:

```
mkdir -p MountPoint
```

(where *MountPoint* is the name of each directory in the Mount Pt column.)

and press Enter.

8. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished restoring your `/etc/filesystems` file. Go to "Where Do I Go Next?" on page 4-49.

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to "Restoring Your SNA Configuration" on page 4-48.

If you have any nonroot volume groups, perform the following procedure.

This procedure is used to make any nonroot volume group hard drives known to your system. If this procedure is not done you will not be able to access your nonroot volume hard drives.

This procedure describes how to import a nonroot volume group and mount the file systems.

PROCEDURE

1. Type the following:

```
smit importvg
```

(or `smit -C importvg` if you are working in AIXwindows.)

and press Enter.

2. `VOLUME GROUP name` is highlighted.

Type the name you want to call this volume group.

3. Move the cursor to `PHYSICAL VOLUME name`.

Press F4 to list the available physical volumes.

A list of physical volumes should be displayed.

4. Move the cursor to select the physical volume you want to import.

Press Enter.

5. A Command Status screen appears. When the `Command:` status indicator changes to OK, press F10 to exit SMIT.

6. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished importing your volume groups. Go to the next procedure, "Restoring Your SNA Configuration."

Restoring Your SNA Configuration

If you are *not* using the "Upgrade Utilities" to upgrade your system from Version 3.1 to Version 3.2, go to the next section, "Where Do I Go Next?"

If SNA was *not* already installed on your system when you began to install BOS, go to the next section, "Where Do I Go Next?"

If you are *not* going to install SNA, go to the next section, "Where Do I Go Next?"

The following procedure restores the SNA configuration information you saved using the "Upgrade Utilities:"

PROCEDURE

1. Type the following:

```
cd /
```

and press Enter.

2. Insert the backup image labeled "Configuration File for rsconf" into your tape or diskette drive.

3. To restore the SNA migration file, type the following:
(where *name* is the name of your tape or diskette drive.)

```
restore -xqvf /dev/name ./tmp/.SNA_migration
```

and press Enter.

You have finished restoring your SNA configuration. Continue to the next section, "Where Do I Go Next?"

Where Do I Go Next?

When you selected your software from the Network Install File Selection menu (step 5 and 6 in section "E. Install the Base Operating System" on page 4-29), did you pick *only* the following three items: Base Operating System (***/bos.obj***), Locale (***/bsl***), and Messages (***/bsm***)?

NO: I picked additional software.

Only the three pieces of software listed in the question were actually installed during the network transfer. The rest of the software you selected was only copied from the server into a directory on your system's hard disk and now resides in that directory in compressed form. To expand and install this software, you must go to "Chapter 6. Optional Software Installation" and use the Image Directory procedures, *not* the Network Installation procedures. You will be installing from the directory on your own hard disk (**/usr/sys/inst.images**).

YES: I only selected the software listed in the question.
Did you use the partial network transfer method?

YES: Go to "Chapter 6. Optional Software Installation" and use the Network Installation Server procedures to install the rest of your software.

NO: If you do not need to install any more software, go to "Chapter 8. Post-Installation Procedures."

Advanced Path: BOS Installation from a Network

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning Your Installation" and complete a BOS Installation Worksheet. Then, return here and continue with the next section.

B. Start the System

1. If the system is turned OFF, skip to step 2.
If the system is turned ON, use the **shutdown** command to shut it down.
2. If the system is a RISC System/6000 model 580, 950, 970, or 980, turn the system key to the SERVICE position.
If the system is *not* one of these models, turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.
4. If you are using an ASCII terminal, set the communications, keyboard, and display options as described in step 4 on page 4-8.
5. Flip the system unit power switch to the ON position.
Note: On some models (such as the RISC System/6000 model 580, 950, 970, and 980), the **shutdown** command turns off the system unit but it does not automatically flip the power switch to the OFF position. In this case, flip the power switch to the OFF position and then back to the ON position.
6. If the system is a RISC System/6000 model 580, 950, 970, or 980, wait three seconds and then turn the system key to the SECURE position.
If your system is *not* one of these models continue with the next step.
7. After several minutes, the 200 code will appear on the three-digit LED display.
8. Insert the BOS CD-ROM, first BOS tape, or the BOS Boot diskette.
Note: If you will be pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must boot your system from a tape or diskette that has been created on a system that has the FDDI software installed and all associated service updates either applied or committed.

If necessary, enter `lslpp -h` to see if the FDDI service updates have been either applied or committed on your system. If they have not, refer to the documentation that accompanied your installation media for information about how to install the the FDDI service updates.
9. Turn the system key to the SERVICE position.
10. Press the yellow system RESET button twice in quick succession.
11. If you are installing from CD-ROM or tape, go to step 14.
12. When `c07` appears on the three-digit LED display, insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
13. When `c07` appears the second time, insert the BOS Display diskette.
14. When `c31` appears on the three-digit LED display, select the device that you want to use as your console.
15. If you are installing from diskettes, insert the BOS Install/Maintenance diskette.

16. At the 3.2 INSTALLATION AND MAINTENANCE screen, select item 1.

17. What type of installation are you performing?

PRESERVATION

- At the METHODS OF INSTALL screen, enter 1.
- Go to section "D. Preservation: Change the Current System Settings."

COMPLETE OVERWRITE

- At the METHODS OF INSTALL screen, enter 2.
- Go to the next section, "C. New or Complete Overwrite: Change the Current System Settings."

NEW

- Go to the next section, "C. New or Complete Overwrite: Change the Current System Settings."

C. New or Complete Overwrite: Change the Current System Settings

1. To change the LOCALE (Language), enter 1 and choose the correct LOCALE (Language).
2. To change the INPUT Installation Device, enter 2 and choose the correct installation device.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

3. To change the DESTINATION Disks, enter 3 and choose your destination disks.
4. To change the STARTUP (Boot) Disk, enter 4 and choose your startup disk.

D. Preservation: Change the Current System Settings

1. To change the LOCALE (Language), enter 1 and choose the correct installation device.
2. To change the INPUT Installation Device, enter 2 and choose the correct installation device.

Note: If you booted from diskette and are pulling the backup image from a network server over a Fiber Distributed Data Interface (FDDI) network, you must specify that FDDI is the Input Installation Device, even if FDDI is displayed on the Current System Settings menu as the default Input Installation Device.

3. To change the DESTINATION root VG, enter 3 and choose the destination root VG.

E. Start the Installation Process

1. From the Current System Settings screen, enter 0 to begin the installation.
2. From the FINAL WARNING screen, enter 0 to start the installation.
3. Choose the **bos.obj** from the "Network Install File Selection" menu.
4. Enter 0 to continue the installation.
5. When the reboot screen appears, do the following:
 - Remove the CD-ROM, tape, or diskette from the drive.
 - Turn the system key to the NORMAL position.
 - Press Enter to reboot the system.
6. After the system reboots, log in to the system as root.

F. Set Up the Display Device

1. If you are using an HFT, skip to the section titled "H. Read the BOS README File."
2. Enter `export TERM=xxx` where `xxx` is your display name.
3. Enter `chdev -a term=xxx -l zzz` where `xxx` is your display name and `zzz` is the tty device you are using.

G. Setting Up an ASCII Terminal

If you are using a non-English Locale (Language), do the following:

- Enter `ls /etc/nls/termmap` to list the available input and output map files.
- Enter `setmaps -t mapfile` where `mapfile` is from the termmap listing.
- Enter `chdev -l ttyx -a imap=mapfile -a omap=mapfile` where `x` is the tty device you are using and `mapfile` is from this termmap listing.

H. Read the BOS README File

1. Enter `pg /usr/lpp/bos/README` to read the installation part of the BOS README file.
2. If you are performing a full network installation, skip to "J. Set the Date and Time."

I. Partial Transfer: Preparations for Optional Software Installation

1. Execute the **smit mktcpip** command to configure TCP/IP.
2. If you are not using a nameserver, execute the **smit mkhostent** command.
3. Execute the **smit mknfs** command to configure NFS.
4. Execute the **smit mknfsmnt** command and mount the server's installation image directory on the client's `/usr/sys/inst.images` directory.

J. Set the Date and Time

1. Enter `date` to check the system date.
2. If the date is not correct, execute the **smit chtz** command to change the date.

K. BOS Installation Completion Procedures

What type of installation are you performing?

PRESERVATION

Go to the procedure titled "Preservation Installation: Restoring the `/etc/filesystems` File."

COMPLETE OVERWRITE

Go to the procedure titled "Complete Overwrite Installation: Importing Any Nonroot Volume Groups."

NEW

Go to the section titled "Where Do I Go Next?" on page 4-53.

Preservation Installation: Restoring the `/etc/filesystems` File

If you are using the "Upgrade Utilities" to restore your configuration, skip this procedure and go to "Restoring Your SNA Configuration."

1. Enter `lsvg -o | xargs imfs` to create the mount points for all journaled file systems known to the system.
2. Enter `cp /etc/filesystems.old /etc/filesystems` at the system prompt.

3. Enter `lsfs -v nfs` to list the NFS file systems in the `/etc/filesystems` file.
4. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
5. Enter `lsfs -v cdrfs` to list the CD-ROM file systems in the `/etc/filesystems` file.
6. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
7. Execute `smit mountfs` to mount any journaled file systems.
8. Go to the last section, "Where Do I Go Next?" on page 4-53.

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to "Restoring Your SNA Configuration."

1. Execute the **smit importvg** command to import and vary on any nonroot volume groups.
2. Execute the **smit mountfs** command to mount any journaled file systems.
3. Go to the next section, "Restoring Your SNA Configuration".

Restoring Your SNA Configuration

If you are *not* using the "Upgrade Utilities," go to the next section, "Where Do I Go Next?".

If SNA was *not* already installed on your system when you began to install BOS, go to the next section, "Where Do I Go Next?".

If you are *not* going to install SNA, go to the next section, "Where Do I Go Next?".

1. Enter `cd /` at the system prompt.
2. Insert the backup image labeled "Configuration File for rsconf" in the tape or diskette drive.
3. Enter `restore -xqvf /dev/name ./tmp/.SNA_migration` where *name* is the name of your tape or diskette drive.

Where Do I Go Next?

If you are installing optional software, go to "Chapter 6. Optional Software Installation."

If you do not need to install optional software, go to "Chapter 8. Post-Installation Procedures."

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **backup** command, **ls** command, **pax** command, **restore** command, **smit** command, and **sysck** command.

The Backup Overview in *System Management Guide* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *System Management Guide* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *System Management Guide* provides information on mounting files and directories, mount points, and automatic mounts.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

Chapter 5. BOS Installation for Use with a /usr Server

This chapter describes how to install a portion of the Version 3.2 Base Operating System on a system and how to configure that system to remotely access the **/usr** file system.

Note: Remote access to the **/usr** file system is not supported over a Fiber Distributed Data Interface (FDDI) network.

The **/usr** file system contains common executable software that is sharable across the same architecture. When you use this procedure to install a system, only the **/** (root) file system and the information necessary to start (boot) the system are installed. The **/usr** file system is not installed. Instead, the system you are installing is configured to access the **/usr** file system remotely from a network server.

This chapter contains the following sections:

- Choosing between a New Installation, a Preservation Installation, and a Complete Overwrite Installation 5-2
- Flow Chart for BOS Installation for User with a /usr Server 5-3
- Prerequisite Tasks and Conditions 5-4
- Installation Procedure 5-5
- Advanced Path: BOS Installation for User with a /usr Server 5-57
- Related Information 5-61

Choosing between a New Installation, a Preservation Installation, and a Complete Overwrite Installation

The chapter explains three different methods for installing BOS: New Installation, Preservation Installation, and Complete Overwrite Installation. The instructions are combined in one procedure because the three types of installation are very similar. The differences in the procedures will be pointed out where they occur.

A *volume group* is one disk or a group of hard disks on your system. A *root volume group* (RVG) is a group of hard disks in which the root portion of BOS is stored. This means that a root volume group can be used to boot (start up) your system. It is possible to have multiple root volume groups on a system, but only one is necessary.

1. *New Installation* is performed when the hard disk or disks you are installing BOS onto are *empty*. A hard disk is empty if it does not contain any data or if it contains some data, but it does not contain a root volume group (it is not bootable).
2. *Preservation Installation* installs the Version 3.2 Base Operating System (BOS) and preserves the existing root volume group on your system. This method only overwrites the temporary (*/tmp*), */var*, and root (*/*) file systems of the previously installed version. Use this installation procedure when a previous version of BOS is installed on your system, and you want to preserve the root volume group, including your system configuration.

A Preservation Installation will automatically preserve only some of the data on your system (the contents of the root volume group). It will still be necessary for you to use the Upgrade Utilities or the System Management Interface Tool (SMIT) to preserve and restore all of your system data.

3. *Complete Overwrite Installation* is used when a previous version of BOS is installed on your system, and you want to completely overwrite the existing version of BOS. This procedure may impair recovery of data or destroy all existing data on your hard drives.

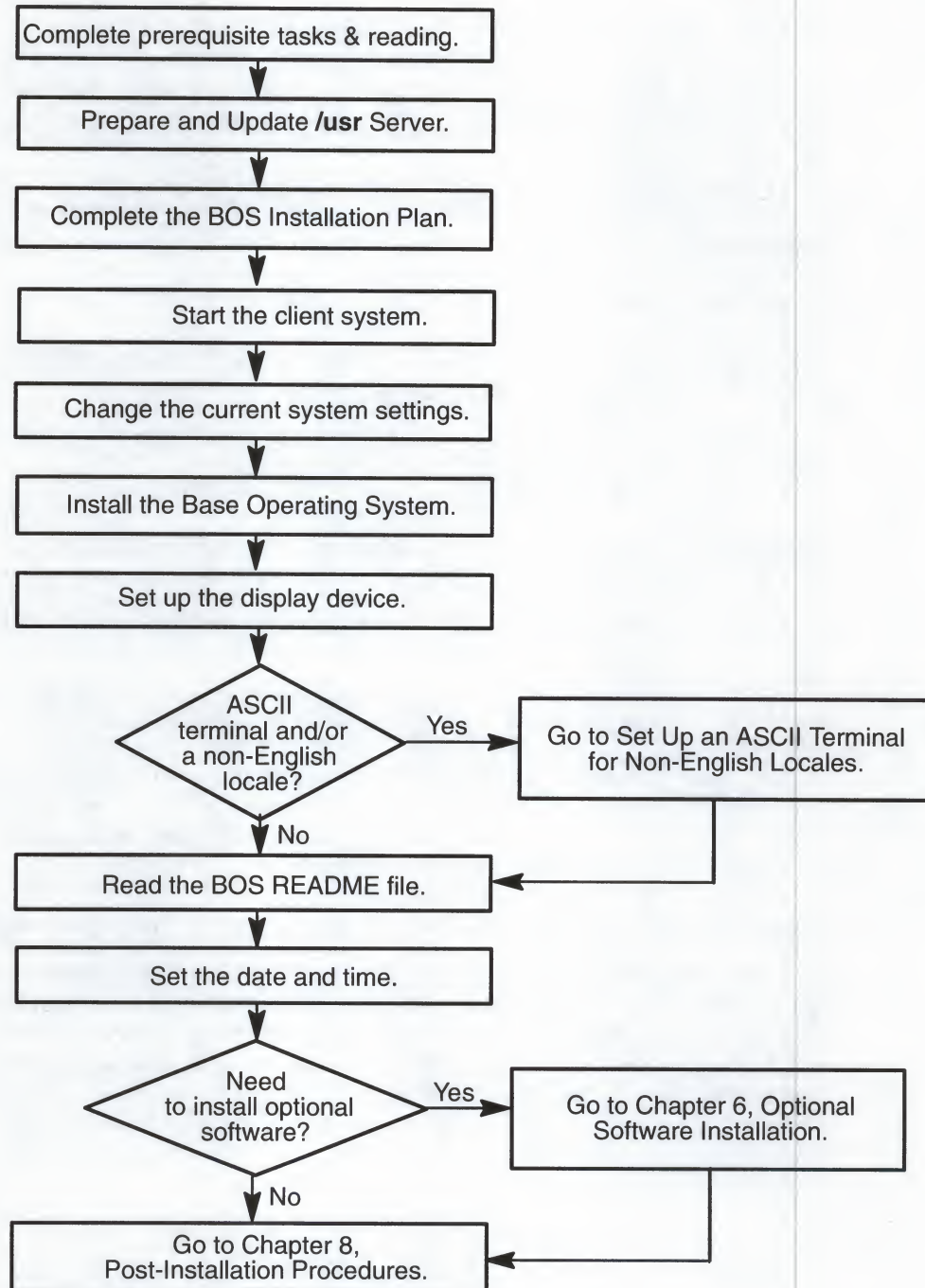
Use Complete Overwrite when:

- You want to install onto disks that contain an existing root volume group, but you want to completely overwrite the root volume group (RVG). For example, this might occur if your root volume group has become corrupted.
- You want to reassign your hard disks. For example, you have four hard disks and they all belong to one root volume group and you want to separate the disks into two volume groups. First do a Complete Overwrite Installation and select the first two disks as the installation destination. These two disks become the root volume group. You then use SMIT to combine the remaining two disks into a second (nonroot) volume group (VG). The result is two separate volume groups. All of the operating system files are in the root volume group and you can store user data in the second volume group. When the operating system in the first root volume group (RVG) is updated or reinstalled, the user's data in the second volume group (VG) is unaffected.

Warning: The Complete Overwrite procedure overwrites the selected destination disks. This means that after the installation is complete, you will have to manually configure your system using SMIT or the command line. If you want to preserve your system configuration and you do *not* need to completely overwrite your root volume group, do *not* use Complete Overwrite. Instead, use the Preservation Installation procedure described in this chapter.

Flow Chart for BOS Installation for User with a /usr Server

This flow chart outlines the basic steps you must perform to install the Version 3.2 Base Operating System for use with a **/usr** server.



Prerequisite Tasks and Conditions

1. All hardware must already be installed, including any external devices, such as tape and CD-ROM drives, and all necessary microcode.
2. Locate the key for the key lock on your system unit.
3. You should be familiar with the procedures for operating your hardware. If you are not, read "Chapter 18. Hardware Basics." Then, return here and continue with the next step.
4. In this chapter, you will be using the System Management Interface Tool (SMIT). If you are not familiar with SMIT, read "Chapter 19. SMIT Basics." Then, return here and continue with the next step.
5. Locate your installation media.

CD-ROM Do the following only if you are booting from CD-ROM:
Find the AIX/6000 Version 3.2 BOS CD-ROM.

Tape Do the following only if you are booting from tapes.
Find the AIX/6000 Version 3.2 BOS tapes.

Diskette Do the following only if you are booting from diskettes.
Find the following AIX/6000 Version 3.2 BOS diskettes:

BOS Boot, Display, Install/Maintenance, and, if appropriate, BOS Display
Extensions diskettes.

If you are using a display adapter card, be sure that you have the display
diskette from that manufacturer.

Note: If you are not sure whether you have a display adapter installed,
consult the "About Your Machine" document that was shipped
with your system. It contains a list of the factory hardware
shipped with your system.

6. If you are doing a new installation, skip to the next section, "Installation Procedure."

If you are doing a Preservation Installation or a Complete Overwrite Installation, and the
system you are installing is not already using a **/usr** server, it is recommended that you
locate or create a backup of your system before you begin the installation. To do this, go
to "Chapter 15. Backing Up Your System" and then return here and continue with the
next section, "Installation Procedure."

Installation Procedure

This chapter contains instructions for the following procedures:

- A. Preparing and Updating the **/usr** Server
- B. Complete the BOS Installation Plan
- C. Start the Client System
- D. New or Complete Overwrite: Change the Current System Settings
- E. Preservation: Change the Current System Settings
- F. Start the Installation Process
- G. Set up the Display Device
- H. Setting Up an ASCII Terminal
- I. Read the BOS README File
- J. Set the Date and Time
- K. BOS Installation Completion Tasks
- L. Change the Way a Client Accesses a Remote **/usr** Server.

If you have not already installed BOS Version 3.2 on your remote **/usr** client, go to the next section, "A. Preparing and Updating the **/usr** Server," on page 5-6.

If you have already installed BOS Version 3.2 on your remote **/usr** client and you want to change the way your client accesses a remote **/usr** server, go to the section titled "L. Change the Way a Client Accesses a Remote **/usr** Server" on page 5-54.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin with the next section, "A. Preparing and Updating the **/usr** Server." This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of BOS and only need a minimal set of instructions, you can skip to page 5-57 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin with the next section.

A. Preparing and Updating the /usr Server

This section describes how to prepare and update a **/usr** server from an installed system.

Before you can install a client system to use **/usr** remotely, a **/usr** server must be prepared. This section contains the procedures for preparing and updating a **/usr** server.

Prerequisite Tasks or Conditions

1. Server software and hardware is installed including:
 - BOS Version 3.2.
 - TCP/IP and NFS software. If this software is not yet installed, refer to "Chapter 6. Optional Software Installation." If this software is not yet configured, refer to "Chapter 14. Network Configuration."
 - An Ethernet or Token-Ring network adapter.
2. Server unit is ON and the key switch is set to the NORMAL position.

Making the /usr File System Remotely Available

If you have already exported **/usr**, you can skip to the next section, "Updating the Host List."

- If you have *not* created a **/usr** server, you must create one now.

This procedure describes how to make the **/usr** file system on the **/usr** server available to other systems on the network.

PROCEDURE:

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit mknfsexp          (or smit -C mknfsexp if you are working in AIXwindows.)  
and press Enter.
```

A screen similar to the following displays:

| Add a Directory to Exports List | | | |
|---|------------|----------------|----------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| | | [Entry Fields] | |
| * PATHNAME of directory to export | [] | / | |
| * MODE to export directory | read-write | + | |
| HOSTNAME list. If exported read-mostly | [] | | |
| Anonymous UID | [-2] | | |
| HOSTS allowed root access | [] | | |
| HOSTS & NETGROUPS allowed client access | [] | | |
| Use SECURE option? | no | + | |
| * EXPORT directory now, system restart or both | both | + | |
| PATHNAME of Exports file if using HA-NFS | [] | | |
| | | | |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. `PATHNAME` of directory to export is highlighted. Type the following but do *not* press Enter until you get to step 5.

`/usr`

4. Move the cursor to `MODE` to export directory. Press the Tab key to change the default to `read-only`.

5. Press Enter. A `COMMAND STATUS` screen appears.

Note: If the message appears saying that an export for `/usr` already exists, it means that `/usr` has been previously exported. Continue with the next step.

6. When the command finishes running, press F10 to exit SMIT.

You have finished creating a `/usr` server. Continue with the next section, "Updating the Host List."

Updating the Host List

If you are using a nameserver for network communications, you do not need to perform this procedure. Instead, have your network administrator update the nameserver and go to the next section, "Updating the Server's Client Access List" on page 5-8.

If you are *not* using a nameserver for network communications, follow the steps below to update the server's hosts list to include the names of the clients you now want to add to this server.

PROCEDURE:

1. To add the hostname of the client, type the following:

`smit mkhostent` (or `smit -C mkhostent` if you are working in AIXwindows.)
and press Enter.

A screen similar to the following displays:

Add a Host Name

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|---|----------------|
| * INTERNET ADDRESS (dotted decimal) | [Entry Fields] |
| * HOST NAME | [] |
| ALIAS(ES) (if any – separated by a blank space) | [] |
| COMMENT (if any – for the host entry) | [] |

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

Note: Do *not* press Enter until you have finished making changes on this screen. Use the cursor to move to the next field.

2. INTERNET ADDRESS (dotted decimal) is highlighted. Type the address of the client.
3. Move the cursor to HOST NAME. Type the name of the client.
4. To add the host, press Enter.
5. Press F10 to exit SMIT.

The server now knows the name of the client. Continue with the next section titled "Updating the Server's Client Access List."

Updating the Server's Client Access List

This procedure describes how to give clients access to the `/usr` file system on the `/usr` server.

PROCEDURE:

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit chnfsexp          (or smit -C chnfsexp if you are working in AIXwindows.)
and press Enter.
```

A screen similar to the following displays:

Change/Show Attributes of an Exported Directory

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

* PATHNAME of exported directory

[] +

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Type the following:

```
/usr
```

and press Enter.

A screen similar to the following displays:

Change/Show Attributes of an Exported Directory

Type or select values in entry fields.

Press Enter AFTER making all desired changes.

[Entry Fields]

| | | |
|--|-----------|---|
| * PATHNAME of exported directory | [/usr] | |
| * MODE to export directory | read-only | + |
| HOSTNAME list. If exported read-mostly | [] | |
| Anonymous UID | [-2] | |
| HOSTS allowed root access | [] | |
| HOSTS & NETGROUPS allowed client access | [] | |
| Use SECURE option? | no | + |
| * EXPORT directory now, system restart or both | both | + |
| PATHNAME of Exports file if using HA-NFS | [] | |

F1=Help

F2=Refresh

F3=Cancel

F4=List

F5=Undo

F6=Command

F7=Edit

F8=Image

F9=Shell

F10=Exit

Enter=Do

4. Move the cursor to `HOSTS` allowed root access. Type all of the hostnames (separated by commas) that will be remote `/usr` clients (do not press Enter). For example, if you have three clients that will be remote `/usr` clients and they are named walter, esther, and britt, you would type: walter, esther, britt.
5. Move the cursor to `HOSTS & NETGROUPS` allowed client access. If there are entries already in this field, use the right arrow key to move the cursor to the end of the list. Type the hostname (separated by commas) of each client that will need to access the `/usr` file system.
6. Press Enter. A Command Status screen appears. When the Command: status indicator changes to OK, press F10 to exit SMIT.
7. Type the following:

smit rmnfs (or smit -C rmnfs if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

Stop NFS

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

* Stop NFS now, on system restart or both now +

F1=Help
F5=Undo
F9=Shell

F2=Refresh
F6=Command
F10=Exit

F3=Cancel
F7=Edit
Enter=Do

F4=List
F8=Image

8. Press Enter. A Command Status screen appears. When the **Command:** status indicator changes to **OK**, press F10 to exit SMIT.

9. Type the following:

`smit mknfs` (or `smit -C mknfs` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

Start NFS

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

* Start NFS now, on system restart or both both +

F1=Help
F5=Undo
F9=Shell

F2=Refresh
F6=Command
F10=Exit

F3=Cancel
F7=Edit
Enter=Do

F4=List
F8=Image

10. Press Enter. A Command Status screen appears. When the **Command:** status indicator changes to **OK**, press F10 to exit SMIT.

You have finished updating the **/usr** server's client access list. Continue with the next section, "B. Complete the BOS Installation Plan."

B. Complete the BOS Installation Plan

Go to "Chapter 16. Planning Your Installation" and complete the BOS Installation Plan. Then, return here and continue with the next section, "C. Start the Client System."

C. Start the Client System

Perform the following procedure on your *client* system, not your installation server.

1. If your system is turned OFF, go to step 2.
If your system is already turned ON, use the following procedures to shut it down.

- a. If you are not already logged in as root, log in as root now.
- b. Type the following:

```
shutdown
```

and press Enter.

The shutdown process is complete when the following message is displayed:

```
Halt completed ...
```

Note: On some models (such as the RISC System/6000 580, 950, 970, and 980), the **shutdown** command turns off the power to the system unit. It does not, however, automatically flip the power switch to the OFF position.

- c. When the shutdown process is complete, flip the system unit power switch to the OFF position. Do not turn your system unit back on until you get to step 5.

Note: If the **shutdown** command turned off the system unit, you still need to flip the power switch to the OFF position.

2. Depending on the system unit, do one of the following:

- If your system is a RISC System/6000 model 580, 950, 970, or 980, turn the system key to the SERVICE position.
- If your system is *not* one of these models, turn the system key to the SECURE position.

3. Turn on all attached external devices, such as terminals, CD-ROM drives, tape drives, monitors, and external disk drives.

Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

4. If you are not using an ASCII terminal, skip to step 5.
If you are using an ASCII terminal, set the terminal's communications options as follows:

- Line Speed (baud rate) = 9600
- Word Length (bits per character) = 8
- Parity = No (None)
- Number of Stop Bits = 1
- Interface = RS-232C (or RS-422A)
- Line Control = IPRTS

It is also recommended that you set the terminal's keyboard and display options as follows:

- Screen = Normal
- Row and Column = 24x80
- Scroll = Jump
- Auto LF (line feed) = Off
- Line Wrap = On
- Forcing Insert = Line (or Both)
- Tab = Field
- Operating Mode = Echo
- Turnaround Character = CR
- Enter = Return
- Return = New Line
- New Line = CR
- Send = Page
- Insert Character = Space

Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the onscreen instructions to set these options. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set these options. Please note that some non-IBM terminals may have different option names and settings than those listed here.

5. Turn the client system unit power switch to the ON position.
6. Depending on the system unit, do one of the following:
- If your system is *not* a RISC System/6000 model 580, 950, 970, or 980 skip to step 7.
 - If your system is a RISC System/6000 model 580, 950, 970, or 980, do the following:
 - a. Wait three seconds.
 - b. Turn the system key to the SECURE position.
7. After several minutes, the 200 code will appear on the three-digit LED display on the client system unit.

Note: On some systems, you may have to flip open a plastic door to see the three-digit LED display.

8. Depending on your installation media, do one of the following:

- | | |
|----------|---|
| CD-ROM | Insert the AIX/6000 Version 3.2 BOS CD-ROM into a disc caddy and insert the caddy into your CD-ROM drive. Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it. |
| Tape | Insert the AIX/6000 Version 3.2 BOS tape into your tape drive. Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens. |
| Diskette | Insert the AIX/6000 Version 3.2 BOS Boot diskette into the diskette drive. Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes. |

9. If the system key is not already turned to the SERVICE position on your client system, turn it to the SERVICE position now.

10. Press the yellow system RESET button twice in quick succession.

Note: On some systems, a Main Menu or Select Language screen may appear. If the Main Menu appears, follow the onscreen instructions to select the Exit Main Menu & Start System (boot) option. If the Select Language screen appears, follow the onscreen instructions to return to the Main Menu and select the Exit Main Menu & Start System (boot) option.

11. Your client system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.

- | | |
|----------|--|
| CD-ROM | If you are installing from CD-ROM, go to step 14. |
| Tape | If you are installing from tape, go to step 14. |
| Diskette | If your system has one of the following display adapters installed, go to step 12. Otherwise, go to step 13. |

Note: If you ordered an adapter with your system, the adapter name will be listed on your "About Your Machine" document as one of the following:

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any other IBM graphics adapter

If your system does *not* have one of the above adapters installed, go to step 13.

12. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).

Note: When c07 appears the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette in the drive and insert the BOS Display diskette.

Continue with step 14.

13. When the c07 code appears on your three-digit LED system display, remove the diskette in the drive and insert the BOS Display diskette into the diskette drive.

Note: When c07 appears the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 14.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

14. The screen may stay blank for several minutes. Then, c31 will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.

Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

Press the specified keys only on the console that you want to use as your system console.

| | |
|----------|----------------|
| CD-ROM | Go to step 16. |
| Tape | Go to step 16. |
| Diskette | Go to step 15. |

15. A message similar to the following is displayed:

Insert BOS Install/Maint Diskette and Press Enter.

When you see this message, remove the Display diskette, insert the BOS Install/Maintenance diskette, and press Enter.

Note: Depending on your system, you may be prompted for Volume 2 of the Install/Maint diskette. If you are, remove Volume 1 from the diskette drive, insert Volume 2, and press Enter.

16. A series of messages is displayed. This may take several minutes.

Note: If you are booting from tape, it is normal for the system to move the tape back and forth during this period.

A screen similar to the following displays:

AIX 3.2 INSTALLATION AND MAINTENANCE

Select the number of the task you want to perform.

>>>1 Install AIX.
2 Install a system that was created with the SMIT "Backup the System" function or the "mksysb" command.
3 Install this system for use with a "/usr" server.
4 Start a limited function maintenance shell.

Type the number for your selection, then press Enter: 1

Note: The >>> (arrows) on this menu indicate the default selection. During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right shift key.

CD-ROM Continue with step 17.

Tape Continue with step 17.

Diskette Remove the BOS Install/Maintenance diskette from the diskette drive. Then continue with step 17.

17. To select 3. Install this system for use with a /usr server, type the following:

3

and press Enter.

18. If you are doing a Preservation Installation or a Complete Overwrite Installation, continue with step 19.

If you are doing a New Installation, go to the section, "D. New or Complete Overwrite: Change the Current System Settings," on page 5-17.

19. If you are doing a Preservation or Complete Overwrite Installation, a screen similar to the following displays:

METHOD OF INSTALL

Select the number of the type of installation you want to perform

>> 1 PRESERVATION INSTALL
Preserves SOME of the data on the destination hard disk.
Only overwrites the usr (/usr), temporary (/tmp), and root (/) file systems of the previously installed version of the AIX.

2 COMPLETE OVERWRITE INSTALL
May overwrite EVERYTHING on the destination hard disk.
– If the destination disk is totally empty, select 2.
– If AIX is already installed on the destination hard disk but there is nothing on the disk that you want to preserve, select 2.

99 Return to previous menu

Type the number for your selection, then press Enter: 1

20. Select the method of install that you want to use by typing the appropriate number and then press Enter. The Current System Settings screen will then appear.

If you are doing a Preservation Install go to "E. Preservation: Change the Current System Settings" on page 5-28.

If you are doing a Complete Overwrite Install, go to the next section, "D. New or Complete Overwrite: Change the Current System Settings," on page 5-17.

D. New or Complete Overwrite: Change the Current System Settings

Note: Do *not* select 0 on the following Current Systems Settings screen until after you have read all of the instructions in this section.

A screen similar to the following displays:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct, type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter.

| | CURRENT CHOICE |
|---|------------------------|
| 1 LOCALE (language) | C (POSIX) |
| 2 INPUT Installation Device | 150 mb Tape: /dev/rmt0 |
| 3 DESTINATION Disks | 00-01-00-00 |
| 4 STARTUP (Boot) Device | 00-01-00-00 |
| | |
| 99 Return to previous menu | |
| 0 Install the AIX base operating system with the current settings | |

Type the number for your selection, then press Enter: 0

Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure.

If you do not need to change the locale, go to the next section, "Input Installation Device" on page 5-19.

PROCEDURE:

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following displays:

CHANGE LOCALE

Select the number for the language/locale.

| | |
|-------------------------|-------------------------------|
| >>> 1 C (POSIX) | 16 Icelandic |
| 2 Chinese (Taiwan) | 17 Italian |
| 3 Danish | 18 Japanese |
| 4 Dutch (Belgium) | 19 Korean |
| 5 Dutch | 20 Norwegian |
| 6 English (UK) | 21 Portuguese |
| 7 English (US) | 22 Spanish |
| 8 Finnish | 23 Swedish |
| 9 French (Belgium) | 24 Turkish (qwerty keyboard) |
| 10 French (Canada) | 25 Turkish (fggioid keyboard) |
| 11 French (Switzerland) | |
| 12 French (France) | |
| 13 German (Switzerland) | |
| 14 German | |
| 15 Greek | |

99 Return to previous menu

Type the number for your selection then press ENTER: 1

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

Note: Changes to LOCALE (language) do not take effect until after BOS is installed and your system is rebooted. The Latin-1 countries (U. S., Canada, western Europe) and Japan are supported by two code sets. The default code set is the same code set that you were using in Version 3.1.x. After software installation is completed, users who want to change their language environment or code set should consult the following chapters:

- "Understanding Locale" in the *System Management Guide*.
- "How to Change Your Locale" in the *System Management Guide*.
- "Understanding Code Set Strategy" in the *Kernel Extensions and Device Support Programming Concepts*.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Continue with the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.

Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device, continue with the following procedure.

PROCEDURE:

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following displays:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|-----------|---------------|
| 1 | Diskette: | /dev/fd0 | 00-00-0D-00 |
| 2 | 8mm Tape: | /dev/rmt0 | 00-08-00-30 |
| >>> 3 | CDROM: | /dev/cd0 | 00-08-00-40 |
| 4 | Token-Ring: | /dev/tr0 | 00-00 |
| 5 | Token-Ring: | /dev/tr1 | 00-01 |
| 6 | Standard Ethernet: | /dev/en0 | 00-02 |
| 7 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 8 | Standard Ethernet | /dev/en1 | 00-03: |
| 9 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. If you are installing BOS from a network installation server, skip to step 5.
If you are using another type of device, continue with step 3.
3. Type the number for the device supplying the software you want to install and press Enter.
4. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Skip to the next section, "Destination Disk," beginning on page 5-22.

5. Type the number for the network device supplying the software you want to install and press Enter.

The exact appearance of the following screen will vary according to the type of network device you are using. The following example shows the screen that appears if you select a Standard Ethernet network interface. However, use the procedures that follow for all versions of this screen.

| ENTER NETWORK PARAMETERS | | |
|--|---|-----------------|
| Enter the network parameters that will allow this machine to access the network install server over the en0 network interface. | | |
| 1 | Client address: (Network address of this machine.) | 11.11.11.11 |
| 2 | Server address: (Network address of the network install server.) | 11.111.111.111 |
| 3 | Gateway address: (Optional, required if network is on a subnet.) | |
| 4 | Subnet mask: (Optional, required if network is on a subnet.) | 444.444.444.444 |
| 5 | Ethernet connection type: (bnc or 15 pin d-type) | 15 pin d-type |
| 99 Return to previous menu | | |
| 0 Commit current network settings and return to Settings Menu | | |
| Type the number for your selection, then press "Enter": 0 | | |

If all of the information on the screen is already set correctly, skip to step 15. Otherwise continue with step 6.

Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

6. Type the following:

1

and press Enter

The cursor is at the entry field for Client IP Address. This is the address of the machine you are installing BOS on.

7. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

8. Type the following:

2

and press Enter.

The cursor is at the entry field for Server IP Address. This is the address of the installation server.

Note: This does not have to be the same machine as the machine that will act as your **/usr** server. You can install from one server and have a different machine act as your source for **/usr**. The portion of BOS you install from the installation server must, however, be the same version of BOS that is on your **/usr** server. You will specify the address of your **/usr** server later using option 5 on the Current Systems Settings screen.

9. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

10. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

11. If you are *not* using a gateway, press Enter.

If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

12. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

13. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

14. For item 5 on this menu, you have two choices:

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.

Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

15. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

16. Go to the next section, "Destination Disk," on page 5-22.

Destination Disk

This section describes how to select the hard disk or disks where the portion of the base operating system (BOS) will be installed. The location codes to the right of "Destination Disks" identify the hard disks. Consult your BOS Installation Plan for the location of your destination disks.

Warning: It is extremely important that you install to the correct destination. If your destination disks are not empty, then all of the existing data on the destination disks will be destroyed during BOS installation.

If you need to change the destination disk or disks, continue with the following procedure. If you do not need to change the destination disk, go to the next section, "Startup (Boot) Disk."

PROCEDURE:

1. To select **DESTINATION Disks** at the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following displays:

CHANGE DESTINATION HARD DISK(S)

Select the Destination Hard Disks. At least one bootable disk must be selected. If necessary, more than one hard disk may be selected. To cancel a selection, enter the number a second time. Current selection is indicated by >>>.

| | LOCATION | SIZE (MB) | VOLUME GROUP ID | BOOTABLE DISK |
|-------|-------------|-----------|------------------|---------------|
| *>>>1 | 00-07-00-00 | 320 | 00014099342d572c | Yes |
| *>>>2 | 00-07-00-10 | 320 | 00014099342d572c | No |

99 Return to previous menu
0 Commit current selection and return to Settings Menu

Type the number for your selection, then press Enter: 0

The exact appearance of this screen will vary according to the configuration of your system. In this example, the system has two hard drives, each of which is 320 megabytes in size. Because the disks have volume group ID numbers, the disks are not empty. Together they make up the volume group identified by the number 00014099342d572c. Since there is a *Yes* in the Bootable Disk column for one of the disks, this means that they make up a BOS root volume group that can be used to boot (start) the system.

Note: On the Change Destination Hard Disk(s) menu, the greater-than signs (>>>) indicate that the first seven hard disks in the listing are preselected as the destination disks. You must deselect those hard disks that you do not want to use as the destination disks.

2. To select or deselect a hard disk, type the disk's menu number and press Enter.
 - If the disk was previously selected, the greater-than signs (>>>) disappear from the menu indicating that the disk has been deselected.
 - If the disk was previously not selected, the greater-than signs (>>>) appear to the left of the disk indicating that it is now selected.
3. Continue selecting and deselecting hard disks as required. You can select multiple hard disks as the destination of the AIX Base Operating System (BOS). When you are finished, go to the next step.
4. When you have finished selecting and deselecting the destination hard disks, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Startup (Boot) Disk."

Startup (Boot) Disk

This section describes how to select the hard disk within the group of destination disks that will contain the startup (boot) image. This is the hard disk that will be used to start your system after BOS is successfully installed and you reboot the system.

PROCEDURE:

1. To select **STARTUP (Boot) Disk** at the Current System Settings menu, type the following:

4

and press Enter.

A screen similar to the following displays:

CHANGE STARTUP DISK

Choose the ID# of the startup (boot) disk.

STARTUP DISK

>>> 1 00-01-00-00

99 Return to previous menu

Type the number for your selection, then press ENTER: 0

2. Type the number for the disk on which you want your startup (boot) image to reside, and press Enter.
3. When you have finished, type the following:
0
and press Enter.
The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.
4. Go to the next section, "Network Interface to /usr Server."

Network Interface to /usr Server

This menu option specifies the network interface that you will be using to communicate with your **/usr** server. The submenu under this option is used to enter the network addresses for your client system and the **/usr** server.

Note: Remote access to the **/usr** file system is not supported over a Fiber Distributed Data Interface (FDDI) network.

Note: Even if the interface already appears to be correctly chosen, it is recommended that you reselect the interface and look at the network address settings to make sure they are correct.

PROCEDURE:

1. At the Current System Settings menu, select **NETWORK Interface to /usr Server**. Type the following:

5

and press Enter.

A screen similar to the following displays:

CHANGE THE /usr SERVER NETWORK DEVICE

Select the network device that will be used to access the remote /usr server.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|----------|---------------|
| 1 | Token-Ring: | /dev/tr0 | 00-00 |
| 2 | Token-Ring: | /dev/tr1 | 00-01 |
| 3 | Standard Ethernet: | /dev/en0 | 00-02 |
| >>> 4 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 5 | Standard Ethernet | /dev/en1 | 00-03: |
| 6 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 4

2. The system displays a list of available network adapters. The list will vary according to the equipment installed on your system.

Note: Only network interfaces with logical names that end in zero, one, two or three can be used as the interface to your **/usr** server.

Type the number for the network interface that you will use to contact your **/usr** server and press Enter.

A screen similar to the following displays:

ENTER NETWORK PARAMETERS

Enter the network parameters that will allow this machine to access the **/usr** filesystem over the **en0** network device.

- 1 Client address:
(Network address of this machine.)
- 2 Server address:
(Network address of the **/usr** filesystem server.)
- 3 Gateway address:
(Optional. Required if gateway is used.)
- 4 Subnet mask:
(Optional. Required if network is on a subnet.)
- 5 Ethernet connection type:
(bnc or 15 pin d-type)

99 Return to previous menu
0 Continue with Installation

Type the number for your selection, then press "Enter": 1

Note: The above screen is the standard Ethernet version of this menu. If you are using a different type of interface, there will be variations in the appearance of the screen. However, use the following procedure for all versions of this screen.

If all of the information on the screen is already set correctly, skip to step 12. Otherwise, continue with step 3.

Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, you would type 22.20.11.10 as the network address.

3. Type the following:

1

and press Enter.

The cursor is at the entry field for Client IP Address. *Client* means the machine on which you are installing a portion of BOS.

4. Refer to your **/Usr** Server Parameters Worksheet. Type the client IP address and press Enter.

5. Type the following:

2

and press Enter.

The cursor is at the entry field for Server IP Address. *Server* means the **/usr** server. This may, or may not, be the same machine as your installation server (if you are using one).

Warning: Make sure the server address is entered correctly. An incorrect address will prevent your system from booting correctly.

6. Refer to your /Usr Server Parameters Worksheet. Type the **/usr** server IP address and press Enter.

7. Type the following:

3

and press Enter.

The cursor is at the entry field for the Gateway Address.

8. If you are *not* using a gateway, press enter.

If you are using a gateway, refer to your /Usr Server Parameters Worksheet. Type the gateway address and press Enter.

9. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

10. Refer to your /Usr Server Parameters Worksheet. Type the subnet mask and press Enter.

11. For the last entry on this menu, you have two choices:

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

Type the following:

5

The entry in this field changes to the alternate entry each time you type 5 and press Enter.

Press Enter until the selection you need is displayed.

Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

12. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

13. Go to the section, "F. Start the Installation Process," beginning on page 5-37.

E. Preservation: Change the Current System Settings

Note: Do *not* select 0 on the following Current Systems Settings screen until after you have read all of the instructions in this section.

A screen similar to the following displays:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of a minimum system. If these settings are correct, type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter.

| | |
|--|------------------------|
| 1 LOCALE (language) | CURRENT CHOICE |
| 2 INPUT Installation Device | C (POSIX) |
| 3 DESTINATION Root VG | 150 mb Tape: /dev/rmt0 |
| 4 NETWORK Interface to /usr Server | 00-01-00-00 |
| | Network: en0 |
| 99 Return to previous menu | |
| 0 Install a minimum system with the current settings | |

Type the number for your selection, then press Enter: 0

Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings. Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure.

If you do not need to change the locale, go to the next section, "Input Installation Device" on page 5-30.

PROCEDURE:

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following displays:

CHANGE LOCALE

Select the number for the language/locale.

| | | | | |
|-----|----|-------------------------|----|----------------------------|
| >>> | 1 | C (POSIX) | 16 | Icelandic |
| | 2 | Chinese (Taiwan) | 17 | Italian |
| | 3 | Danish | 18 | Japanese |
| | 4 | Dutch (Belgium) | 19 | Korean |
| | 5 | Dutch | 20 | Norwegian |
| | 6 | English (UK) | 21 | Portuguese |
| | 7 | English (US) | 22 | Spanish |
| | 8 | Finnish | 23 | Swedish |
| | 9 | French (Belgium) | 24 | Turkish (qwerty keyboard) |
| | 10 | French (Canada) | 25 | Turkish (fggioid keyboard) |
| | 11 | French (Switzerland) | | |
| | 12 | French (France) | | |
| | 13 | German (Switzerland) | | |
| | 14 | German | | |
| | 15 | Greek | | |
| | 99 | Return to previous menu | | |

Type the number for your selection then press ENTER: 1

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

Note: Changes to the locale (language) do not take effect until after BOS is installed and your system is rebooted. The Latin-1 countries (U. S., Canada, western Europe) and Japan are supported by two code sets. The default code set is the same code set that you were using in Version 3.1.x. After software installation is completed, users who want to change their language environment or code set should refer to the following chapters:

- "Understanding Locale" in the *System Management Guide*.
- "How to Change Your Locale" in the *System Management Guide*.
- "Understanding Code Set Strategy" in the *Kernel Extensions and Device Support Programming Concepts*.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Continue with the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.

Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device continue with the following procedure.

PROCEDURE:

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following displays:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|-----------|---------------|
| 1 | Diskette: | /dev/fd0 | 00-00-0D-00 |
| >>> 2 | 8mm Tape: | /dev/rmt0 | 00-08-00-30 |
| 3 | CDROM: | /dev/cd0 | 00-08-00-40 |
| 4 | Token-Ring: | /dev/tr0 | 00-00 |
| 5 | Token-Ring: | /dev/tr1 | 00-01 |
| 6 | Standard Ethernet: | /dev/en0 | 00-02 |
| 7 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 8 | Standard Ethernet | /dev/en1 | 00-03: |
| 9 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. If you are installing BOS from a network installation server, skip to step 5. If you are using another type of device, continue with step 3.
3. Type the number for the device supplying the software you want to install and press Enter.
4. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Skip to the next section, "Destination Root Volume Group," on page 5-33.

5. Type the number for the network device supplying the software you want to install and press Enter.

The exact appearance of the next screen will vary according to the type of network device you are using. The following example shows the screen that appears if you select a Standard Ethernet network interface. However, use the procedures that follow for all versions of this screen.

ENTER NETWORK PARAMETERS

Enter the network parameters that will allow this machine to access the network install server over the en0 network interface.

| | | |
|---|---|-----------------|
| 1 | Client address: (Network address of this machine.) | 11.11.11.11 |
| 2 | Server address: (Network address of the network install server.) | 11.111.111.111 |
| 3 | Gateway address: (Optional, required if network is on a subnet.) | |
| 4 | Subnet mask: (Optional, required if network is on a subnet.) | 444.444.444.444 |
| 5 | Ethernet connection type: (bnc or 15 pin d-type) | 15 pin d-type |
| 99 Return to previous menu | | |
| 0 Commit current network settings and return to Settings Menu | | |

Type the number for your selection, then press "Enter": 0

If all of the information on the screen is already set correctly, skip to step 15. Otherwise, continue with step 6.

Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

6. Type the following:

1

and press Enter.

The cursor is at the entry field for Client IP Address. This is the address of the machine you are installing BOS on.

7. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

8. Type the following:

2

and press Enter.

The cursor is at the entry field for Server IP Address. This is the address of the installation server.

Note: This does not have to be the same machine as the machine that will act as your **/usr** server. You can install from one server and have a different machine act as your source for **/usr**. The portion of BOS you install from the installation server must, however, be the same version of BOS that is on your **/usr** server. You will specify the address of your **/usr** server later using option 5 on the Current Systems Settings screen.

9. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

10. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

11. If you are *not* using a gateway, press Enter.
If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

12. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

13. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

14. For item 5 on this menu, you have two choices:

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.

Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

15. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

16. Go to the next section, "Destination Root Volume Group" on page 5-33.

Destination Root Volume Group

This setting specifies the hard disk or disks where you want BOS to be installed. A *volume group* is a single hard disk or a group of hard disks. A *root volume group* is a group of hard disks that contains boot files so that it can be used to start (boot) the system. It is possible to have more than one root volume group on your system. This procedure describes how to select the root volume group that will be the destination for the new version of BOS that you are installing.

Warning: It is extremely important that you select the correct root volume group since some of the existing data in the destination root volume group will be destroyed during BOS installation.

PROCEDURE:

1. To select **DESTINATION root VG** from the Current System Settings menu, type:

3

and press Enter.

A screen similar to the following displays:

CHANGE DESTINATION ROOT VOLUME GROUP

Select the number of the Destination Root Volume Group (RVG).

|< —————hard disks in group—————>|

| | ROOT VOLUME GROUP | LOCATION | SZ | LOCATION | SZ | LOCATION | SZ |
|----|-------------------|-------------|-----|----------|----|----------|----|
| 1. | 000000088158089 | 00-01-00-00 | 320 | | | | |
| 2. | 000000077122013 | 00-01-00-10 | 670 | | | | |

99 Return to previous menu

Type the number(s) for your selection, then press Enter: 1

Note: In this example there are two root volume groups (RVG) already installed on this system. The first is RVG number 88158089, which is on the 320 megabyte disk located at the address 00-01-00-00. The second RVG is number 77122013, which is on the 670 megabyte disk located at the address 00-01-00-10.

2. Consult your BOS Installation Plan for the identification number of your destination root volume group. Type the menu number for the destination root volume group and press Enter. For example, to select **ROOT VOLUME GROUP 000000088158089**, as shown in the example screen, you would type 1 and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

3. Go to the next section, "Network Interface to /usr Server."

Network Interface to /usr Server

This menu option specifies the network interface that you will be using to communicate with your **/usr** server. The submenu under this option is used to enter the network addresses for your client system and the **/usr** server.

Note: Even if the interface already appears to be correctly chosen, it is recommended that you reselect the interface and look at the network address settings to make sure they are correct.

1. At the Current System Settings menu, select **NETWORK Interface to /usr Server**.
Type the following:

5

and press Enter.

A screen similar to the following displays:

CHANGE THE /usr SERVER NETWORK DEVICE

Select the network device that will be used to access the remote /usr server.

| | DEVICE TYPE | PATHNAME | LOCATION CODE |
|-------|---------------------|----------|---------------|
| 1 | Token-Ring: | /dev/tr0 | 00-00 |
| 2 | Token-Ring: | /dev/tr1 | 00-01 |
| 3 | Standard Ethernet: | /dev/en0 | 00-02 |
| >>> 4 | IEEE 802.3 Ethernet | /dev/et0 | 00-02: |
| 5 | Standard Ethernet | /dev/en1 | 00-03: |
| 6 | IEEE 802.3 Ethernet | /dev/et1 | 00-03: |

99 Return to previous menu

Type the number for your selection then press ENTER: 4

2. The system displays a list of available network interfaces. The list will vary according to the equipment installed on your system.
Type the number for the network Interface that you will use to contact your **/usr** server and press Enter.

A screen similar to the following displays:

Note: Only network interfaces with logical names that end in zero, one, two, three, or four can be used as the interface to your **/usr** server.

ENTER NETWORK PARAMETERS

Enter the network parameters that will allow this machine to access the **/usr** filesystem over the **en0** network device.

- 1 Client address:
(Network address of this machine.)
- 2 Server address:
(Network address of the **/usr** filesystem server.)
- 3 Gateway address:
(Optional. Required if gateway is used.)
- 4 Subnet mask:
(Optional. Required if network is on a subnet.)
- 5 Ethernet connection type:
(bnc or 15 pin d-type)

- 99 Return to previous menu
- 0 Continue with Installation

Type the number for your selection, then press "Enter": 1

Note: The above screen is the standard Ethernet version of this menu. If you are using a different type of adapter, there will be variations in the appearance of the screen. However, use the following procedure for all versions of this screen.

If all of the information on the screen is already set correctly, skip to step 12. Otherwise, continue with step 3.

Note: Do *not* type leading zeros in any of the network address triplets. For example, do not type 022.020.011.10. Instead, you would type 22.20.11.10 as the network address.

3. Type the following:

1

and press Enter.

The cursor is at the entry field for Client IP Address. *Client* means the machine on which you are installing a portion of BOS.

4. Refer to your **/Usr** Server Parameters Worksheet. Type the client IP address and press Enter.

5. Type the following:

2

and press Enter.

The cursor is at the entry field for Server IP Address. *Server* means the **/usr** server. This may, or may not, be the same machine as your installation server (if you are using one).

Warning: Make sure the server address is entered correctly. An incorrect address will prevent your system from booting correctly.

6. Refer to your /Usr Server Parameters Worksheet. Type the **/usr** server IP address and press Enter.
7. Type the following:

3

and press Enter.

The cursor is at the entry field for the Gateway Address.

8. If you are *not* using a gateway, press enter.

If you are using a gateway, refer to your /Usr Server Parameters Worksheet. Type the gateway address and press Enter.

9. Type the following:

4

and press Enter.

The cursor is at the entry field for the subnet mask.

10. Refer to your /Usr Server Parameters Worksheet. Type the subnet mask and press Enter.

11. For the last entry on this menu, you have two choices:

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

Type the following:

5

The entry in this field changes to the alternate entry each time you type 5 and press Enter.

Press Enter until the selection you need is displayed.

Warning: If you are using a Token-Ring, make sure you have selected the correct data rate. An incorrect data rate can result in total network disruption.

12. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "F. Start the Installation Process."

F. Start the Installation Process

When you have finished setting all of the values on the Current System Settings menu, you can instruct the system to begin installing the root (/) and boot (start up) portions of the Base Operating System (BOS).

1. To select **Install the Base Operating System with the current settings** at the Current System Settings menu, type the following:

0

and press Enter.

The exact appearance of the following warning screen will vary according to the type of install you are doing. However, use the procedure that follows for all versions of this screen.

A screen similar to the following displays:

FINAL WARNING

Select the number of the desired action

If your destination disks contain any data, then installing this system for use with a /usr server will destroy or impair recovery of all data on the selected disks.

99 Return to Previous Menu
0 Continue with Install

Type the number for your selection, then press ENTER

2. To begin installing the system, type the following:

0

and press Enter.

If within a few seconds you see a `Device is not ready` message, go to step 3. If this message does *not* occur, go to step 4.

3. The wrong input device was probably selected. If this error occurs, you *must* return to step 8 in section "C. Start the Client System" on page 5-13 and repeat the installation procedure.

4. Do one of the following:

Note: If you are using a network input device, make sure you follow the instructions next to the network icon from this point on.

| | |
|----------|--|
| CD-ROM | If you booted from CD-ROM and are installing from CD-ROM, go to step 10. If you booted from CD-ROM and are installing from a network device, go to step 6. |
| Tape | Go to step 10. |
| Diskette | Go to step 5. |
| Network | Go to step 6. |

5. A message similar to the following will appear:

Please insert the first BOS diskette
and press Enter to continue ...

Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes. Insert the first BOS diskette and press Enter. Continue with step 10.

6. In a few seconds, the following messages are displayed:

```
netinstall  
contacting server.....
```

Your client machine is contacting the installation server and requesting the Network Install File Selection menu.

Note: If the installation server cannot be contacted, a system message displays and the Current System Settings menu reappears. Reselect item **2 INPUT Installation Device** and see if your adapter and addresses are set correctly. If these items are correct, contact your network administrator.

7. When the installation server has been contacted, the Network Install File Selection menu will appear. From this menu, you select the software you want to install. The exact appearance of this menu will vary according to the software that has been loaded on the server.

A screen similar to the following displays:

NETWORK INSTALL FILE SELECTION

- 1. /inst.images/risc_sys6000/3.2/X11rte
- 2. /inst.images/risc_sys6000/3.2/bos.obj
- 3. /inst.images/risc_sys6000/3.2/bosnet
- 4. /inst.images/risc_sys6000/3.2/bssiEn_US

- 77. Previous screen
- 88. Next screen
- 99. Return to CHANGE SETTINGS menu
- 0. Continue with Network Install

Choose the ID# of the file(s) to select or exclude

8. Type the ID number for the menu item with the name `*/bos.obj*` (where the "*" may be prefixes or suffixes) and then press Enter.
9. To begin the installation, type the following:
- 0
- and press Enter.

10. As the system begins installing the / (root) and boot portions of BOS, system messages will be displayed as the following activities occur:

- File systems are created.
- Files are restored.

CD-ROM When the following screen appears (this will take a while), continue with step 11.

Tape When the following screen appears (this will take a while), continue with step 11.

Network When the following screen appears (this will take a while), continue with step 11.

Diskette **Note:** As the installation process continues, a message similar to the following may display when it is time to insert another diskette:

```
pax: Ready for volume 2.  
pax: Type "go" when ready to proceed (or "quit" to  
abort):
```

a. Insert the next diskette, type the following:

```
go
```

and press Enter.

Continue inserting diskettes when prompted.

b. When the following screen appears (this will take a while), go to step 11.

Note: There are two error messages that may be displayed during BOS installation that you can ignore. The messages state that no software products were found and that no valid products were left to process. These messages are a normal part of the install process and are not indicative of any errors.

AIX Base Operating System installation is complete.
Please perform the following three steps to activate the
changes made during this installation.

1. Make sure your installation media (tape, diskette, etc.) has been removed from the input device.
2. Turn the system key to the NORMAL position.
3. Press Enter to restart (reboot) the system.

11. Remove the CD-ROM, tape, or diskette from the drive.

Tape

Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

12. Turn the system key to the NORMAL position.

13. Press Enter to shutdown and reboot the system. System messages will appear as the system goes through the shutdown process. As the system reboots, the screen may go blank for a few minutes.

Note: The system will now do a shutdown and a second boot to automatically install the root portions of the optional software products. If the server later installs more optional software, each /usr client must also install the root portion using the procedures outlined in section "C. Installing Optional Software on a Remote /usr Client" in "Chapter 6. Optional Software Installation."

When the system completes the boot (startup) process, a login prompt displays on the console.

14. To log in to the system as root, type the following:

```
root
```

and press Enter.

A system prompt (#) appears.

Your Base Operating System is now installed.

Note: Although a message may appear on the screen instructing you to read the README files, it is not necessary to read those files now.

15. To verify that the /usr file system is mounted through NFS from the remote /usr server, type the following:

```
mount | grep /usr
```

and press Enter.

The system should display a line similar to the following for the /usr file system:

```
197.2.47.47 /usr /mnt nfs Dec 18 11:47 ro,fg,hard,intr,retry=3
```

16. If the entry for the fourth column is nfs, go to step 17.

If the entry for the fourth column is jfs, the remote /usr mount failed. A minimal /usr file system, which was installed during the installation process, is mounted for maintenance and troubleshooting purposes. This local /usr file system contains a subset of the commands normally found in the /usr file system, and is intended for maintenance and emergency use only; but, it cannot be updated with the **installp** command.

If the remote /usr file system is not mounted, go to "Recovering from a Remote /usr Mount Failure" in "Chapter 21. Recovery Procedures" for instructions to diagnose and correct the situation; then return here and continue with step 17.

17. Go to the next section, "G. Set Up the Display Device."

G. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.
2. To see which display name is stored in TERM, type the following:

```
echo $TERM      (note that TERM is in capital letters)
```

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

Possible responses to **echo \$TERM** command:

If TERM = dumb

The system was unable to automatically recognize your display. You must manually set the display name. Go to step 3.

If TERM = hft

And you are using an hft such as IBM models 5081, 6091, or 8508, then go to the section "I. Read the BOS README File" on page 5-46. If you are not using an hft, go to step 3.

If TERM = a specific model number

Such as `IBM3151` and the number is correct, go to "H Setting Up an ASCII Terminal" on page 5-44. If the number is wrong, go to step 3.

3. Use the following procedures to manually set the TERM name.
 - a. If you are using a VT100 terminal, then your TERM name is `vt100`; skip to step d. If you are not using a VT100, continue with step b.
 - b. Display names must be typed in a specific format. To see the terminfo list of the valid display names, type the following:
(where *x* is the first letter [not capitalized] of the name of the manufacturer or type of your display.)

```
ls /usr/share/lib/terminfo/x
```


For example, if you have an IBM display, you would type:

```
ls /usr/share/lib/terminfo/i      (where i stands for IBM.)
```


and press Enter.
 - c. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether the letters are capitalized. For example, for a model 3151 display, the list will show `IBM3151` as the correct display name.

- d. Type the following:

```
export TERM=xxx
```

 (where *xxx* is the exact display name that you copied from the terminfo list.)

and press Enter.

For example, if you are using a 3151, you would type `export TERM=ibm3151` and then press Enter.

4. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 3d. Every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second "/" are the device name. In this example it is `tty0` (note that the last character in this example is a zero, not the letter "o").

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

 (where *xxx* is the display name you used in step 3d and *zzz* is the tty device name you found in step 4a.)

Note: The "-l" in this command is a lowercase "L" and *term* is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, "H. Setting Up an ASCII Terminal."

H. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments.)

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the next section, "I. Read the BOS README File," on page 5-46.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE:

1. To see which locale (language) is stored in the LANG variable, type the following:

```
echo $LANG    (note that LANG is in capital letters.)
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

| | | | |
|-------|----|-------|-----------------|
| C | | | (POSIX) |
| en_GB | or | En_GB | (Great Britain) |
| en_JP | or | En_JP | (Japan) |
| en_US | or | En_US | (United States) |

YES: The system displayed one of the above locales, go to the next section, "J. Set the Date and Time," on page 5-46.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo LANG** command a *lowercase* letter?

YES: It is a *lowercase* letter, go to the next section, "J. Set the Date and Time," on page 5-46.

NO: It is an *uppercase* letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the **.in** suffix. Make careful note on whether the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see which tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname of the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` are the numbers identifying your tty device.

7. To set the input and output map files, type the following:
(where `-l` is a lowercase "L", `x` is the number identifying your tty from step 6, and *mapfile* is the name you wrote down from the termmap listing in step 5.)

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "I. Read the BOS README File."

I. Read the BOS README File

A README file is an online document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the "Installation" part of the BOS README file before you continue. This part of the README will list any changes that you should make to the procedures in this chapter.

The following procedure contains instructions for viewing the BOS README. As you read the README file, write any corrections to this installation procedure into this file.

When you are done with the installation part of the README file, return to page 5-46 and continue with the next section, "J. Set the Date and Time."

Procedure for viewing BOS README:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

Note: There are no blank spaces in the following command.

```
/2.Installation
```

and press Enter.

4. The installation notes appear.

To show the next page Press Enter.

To show the previous page Type -1 and press Enter.

Read the README file and write any corrections to this installation procedure into this manual.

5. When you are finished with the installation part of the README file, type the following at the colon (:) prompt:

```
q
```

and press Enter. The system prompt (#) reappears.

Continue with the next section of this manual, "J. Set the Date and Time."

J. Set the Date and Time

1. At the system prompt (#), type the following:

date

and press Enter.

The system displays the date and time.

Note: Time on your system is expressed in terms of a 24-hour clock, often called "military time." In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to the next section, "K. BOS Installation Completion Tasks" on page 5-50.
- To change the date and time, go to step 2.

2. Type the following:

smit startup (or smit -C startup if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

SYSTEM STARTUP MENU

Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

Backup the System
System Environments
Install / Update Software
TCP/IP
NFS

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Select **System Environments** and press Enter. A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change Number of Virtual Terminals at Next System Restart
Change / Show Date, Time, and Time Zone
Change / Show Characteristics of Operating System
Manage Language Environment
Change Number of Licensed Users

4. Select **Change / Show Date, Time, and Time Zone** and press Enter. A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
Change / Show Date, Time, and Time Zone
Change Language Environment
Change Number of Licensed Users

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

Does this time zone go on
DAYLIGHT SAVINGS TIME?

1 yes
2 no

| | | |
|----------|------------|-----------|
| F1=Help | F2=Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to **yes** and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to **no** and press Enter.

A screen similar to the following displays:

System Environments

Move cursor to desired item and press Enter

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

| | | |
|-------------|----------------------------|----------|
| [TOP] | | |
| (CUT0GDT) | Coordinated Universal Time | (CUT) |
| (TZ 1DT1) | Azures; Cape Verde | (CUT -1) |
| (TZ 2DT2) | Falkland Islands | (CUT -2) |
| (TZ 3DT3) | Greenland; East Brazil | (CUT -3) |
| (AST4ADT) | Central Brazil | (CUT -4) |
| (EST5EDT) | Eastern U.S.; Columbia | (CUT -5) |
| (CST6CDT) | Central U.S.; Honduras | (CUT -6) |
| [MORE...12] | | |

F1=Help
F8=ImageF2=Refresh
F10=ExitF3=Cancel
Enter=Do

6. Move the cursor to highlight your time zone and press Enter. Use the Up and Down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following displays:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|--|---------------------------|
| Old time zone | [Entry Fields] CST6CDT |
| Time Zone | CST6CDT |
| Does this time zone go on daylight savings time? | yes |
| * YEAR (00-99) | [91] |
| * MONTH (01-12) | [04] |
| * DAY (01-31) | [15] |
| * HOUR (00-23) | [11] |
| * MINUTES (00-59) | [32] |
| * SECONDS (00-59) | [05] |

F1 = Help
F5 = Undo
F9 = ShellF2 = Refresh
F6 = Command
F10=ExitF3 = Cancel
F7=Edit
Enter=DoF4 = List
F8 = Image

7. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following displays:

| | | | |
|--|-------------|------------|------------|
| COMMAND STATUS | | | |
| Command: OK | stdout: yes | stderr: no | |
| Before completion, additional instructions may appear below | | | |
| Mon Apr 15 11:32:05 CST 1991 | | | |
| Now exit SMIT and log out and then back in so that any changes to date, time, and time zone will be reflected in your current session. | | | |
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

8. Press F10 to exit SMIT.
 - If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Go to step 9.
 - If you did *not* change the time zone, you have finished setting the date and time. Go to step 11.
9. Use the following procedure to log off the system:

At the system prompt, type the following:

```
exit
```

and press Enter.

The login prompt is displayed. Continue with step 10.
10. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting the date and time. Continue with step 11.
11. You have finished setting the date and time. Continue with the next section, "K. BOS Installation Completion Tasks."

K. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION

Go to the procedure titled "Preservation Installation: Restoring the `/etc/filesystems` File."

COMPLETE OVERWRITE

Go to the procedure titled "Complete Overwrite Installation: Importing Any Nonroot Volume Groups" on page 5-53.

NEW

Go to the section titled "Where Do I Go Next?" on page 5-53.

Preservation Installation: Restoring the `/etc/filesystems` File

If you are using the "Upgrade Utilities" to restore your configuration, skip this procedure and go to the section titled "Where Do I Go Next?" on page 5-53.

If you are *not* using the "Upgrade Utilities," you need to perform the following procedure.

The preservation installation process saves your old `/etc/filesystems` into a file called `/etc/filesystems.old`. This file contains information on your file system's mount points and attributes. You must now copy this data back into the `/etc/filesystems` file and create the mount points for all the journaled file systems.

This procedure describes how to restore your `/etc/filesystems` file, create the mount points, and mount the directories.

PROCEDURE:

1. Type the following:

```
cd /etc
```

and press Enter.

2. To create the mount points for all journaled file systems known to the system, type the following:

```
lsvg -o | xargs imfs
```

and press Enter.

3. To save the current filesystems file, type the following:

```
cp filesystems filesystems.orig
```

and press Enter.

4. To merge the current and old filesystems files, type the following on two lines:

```
( grep -vp "^/usr:" filesystems.old ;  
  egrep -p "^.*usr:" filesystems ) > /tmp/filesystems
```

and press Enter.

If the system displays any error messages, repeat step 4.

If the system does not display any messages, continue with step 5.

5. To move the **filesystems** file from the **/tmp** directory to the **/etc** directory, type the following:

```
mv /tmp/filesystems /etc
```

and press Enter.

6. To verify that the **/etc/filesystems** file is correct, type the following:

```
lsfs
```

and press Enter.

If the output from the **lsfs** command is correct, continue with step 7.

If the output from the **lsfs** command is not correct, do the following:

- a. Type the following:

```
cp filesystems.orig filesystems
```

and press Enter.

- b. Return to step 4.

7. To list the NFS file systems in the **/etc/filesystems** file, type the following:

```
lsfs -v nfs
```

and press Enter.

8. For *each* directory in the listing, type the following:

```
mkdir -p MountPoint
```

(where *MountPoint* is the name of each directory in the Mount Pt column.)

and press Enter.

9. To list the CD-ROM file systems in the **/etc/filesystems** file, type the following:

```
lsfs -v cdrfs
```

and press Enter.

10. For *each* directory in the listing, type the following:

```
mkdir -p MountPoint
```

(where *MountPoint* is the name of each directory in the Mount Pt column.)

and press Enter.

11. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished restoring your **/etc/filesystems** file. Go to the section titled "Where Do I Go Next?" on page 5-53.

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you have any nonroot volume groups, perform the following procedure.

This procedure is used to make any nonroot volume group hard drives known to your system. If this procedure is not done you will not be able to access your nonroot volume hard drives.

This procedure describes how to import a nonroot volume group and mount the file systems.

PROCEDURE:

1. Type the following:

```
smit importvg          (or smit -C importvg if you are working in AIXwindows.)
```

and press Enter.

2. **VOLUME GROUP** name is highlighted.
Type the name you want to call this volume group.
3. Move the cursor to **PHYSICAL VOLUME** name.
Press F4 to list the available physical volumes.
A list of physical volumes should be displayed.
4. Move the cursor to select the physical volume you want to import.
Press Enter.
5. A Command Status screen appears. When the **Command: status** indicator changes to OK, press F10 to exit SMIT.
6. If you want to mount any journaled file systems now, use the **smit mountfs** command.
Continue to the next section, "Where Do I Go Next?"

Where Do I Go Next?

Go to "Chapter 8. Post-Installation Procedures."

L. Change the Way a Client Accesses a Remote /usr Server

This section describes how to change the way a client accesses a remote **/usr** server. You must have already installed Version 3.2 on the remote **/usr** client to use this section.

Note: Remote access to the **/usr** file system is not supported over a Fiber Distributed Data Interface (FDDI) network.

Conceptual Overview

After installing a client for use with a **/usr** server, it may be necessary to change the client's or the server's network attributes, or to change the network connection to the **/usr** server.

You may need to change any of the following:

- Client IP address
- Gateway IP address
- Network device type (Ethernet or Token-Ring)
- Ethernet network interface type (Standard or 802.3)
- Subnet mask
- Token-Ring data rate (4 or 16 Megabit)
- Network adapter (ent0, ent1, tok0, etc)
- Ethernet connector type (bnc or dix)
- Server IP address
- Path of the directory on the **/usr** server to be used as the client's **/usr** file system.

The **/sbin/net.info** file contains the above items Client IP address through "Server IP address" on one line separated by spaces. The **/sbin/net.info** file has the following format:

- client IP address
- server IP address
- gateway IP address or 0 (zero) if no gateway is used
- network adapter type (69 for ethernet, 79 for token-ring)
- hardware slot (0 (zero) for everything)
- ethernet network interface type (1 for 802.3, 0 (zero) for standard)
- subnet mask or 0 (zero) if subnet not used
- token ring data rate (3 or 5 configures 16 megabit, 0 (zero) configures 4 megabit)
- name of network adapter (example: ent0)
- ethernet connector type (1 for bnc, 0 (zero) for dix).

An example of a **/sbin/net.info** entry is:

```
192.100.165.18 192.100.165.28 0 79 0 0 255.255.255.0 0 tok0 0
```

This would be the only line in the client's **/sbin/net.info** file. This example would use a 4 megabit Token-Ring to mount the **/usr** file system on the client with IP address 192.100.165.18 from the server with IP address 192.100.165.28 on a network with subnetmask 255.255.255.0.

The boot process uses the existence of the **/sbin/net.info** file as a signal to try to access the **/usr** file system remotely. If the **/sbin/net.info** file does not exist, the boot process will access the **/usr** file system from the hard disk.

The **/etc/filesystems** file contains the characteristics of the file systems. If the client has been set up to access the **/usr** file system from a server, the **/etc/filesystems** file will have a stanza similar to the following:

```
/usr:
    dev            =/usr
    vfs            =nfs
    nodename       =server_ip_address
    mount          =automatic
    check          =false
    type           =boot
    options        =ro,fg,hard,intr,retry=3
```

You have three choices:

- If you need to change the client IP address through Ethernet connector type, go to the next section, "Changing the Network Interface and Attributes of a /usr Client."
- If the service of a client's **/usr** has been moved to another machine, go to the section titled "Changing the Client's **/usr** Server."
- If the path of the directory on the /usr server has been changed, go to the section titled "Changing the Directory Path on the /usr Server to be Used as the Client's /usr filesystem."

Changing the Network Interface and Attributes of a /usr Client

This procedure describes how to change the network interface and attributes of a **/usr** client.

PREREQUISITE TASKS OR CONDITIONS

1. The **/usr** server must be set up to export a file system to be used as the client's **/usr** file system.
2. The **/usr** client must have been installed using the remote **/usr** option of the BOS installation.

PROCEDURE:

1. On the client machine, type the following:

```
smit mktcpip
and press Enter.
```

2. Change the appropriate network attribute or attributes and press Enter.
3. When the **Command:** status indicator changes to OK, press F10 to exit SMIT.
4. Edit the client's **/sbin/net.info** file and update the appropriate field with the new information as outlined in the concepts section above.
5. For the change to take effect, you must reboot the client. Type the following:

```
shutdown -r
and press Enter.
```

You have finished changing the network interface or attributes of a **/usr** client and you are finished with this chapter.

Changing the Client's /usr Server

This procedure describes how to access a different **/usr** server.

PREREQUISITE TASKS OR CONDITIONS

1. The new **/usr** server must be set up to export a file system to be used as the client's **/usr** file system.
2. The **/usr** client must have been installed using the remote **/usr** option of the BOS installation.
3. Knowledge of a system editor such as the **vi** editor.

PROCEDURE:

1. On the client machine, edit the **/etc/filesystems** file and change the *nodename* field of the **/usr** stanza to contain the new **/usr** server's IP address.
2. On the client machine, edit the **/sbin/net.info** file and change the second item to contain the new **/usr** server's IP address. See "Conceptual Overview" section on page 5-54 for more information on the **/sbin/net.info** file.

3. For the change to take effect, you must reboot the client. Type the following:

```
shutdown -r  
and press Enter.
```

You have finished changing the client's **/usr** server and you are finished with this chapter.

Changing the Directory Path on the /usr Server to be Used as the Client's /usr File System

This procedure describes how to change the directory path on the **/usr** server to be used as the client's **/usr** file system.

PREREQUISITE TASKS OR CONDITIONS

1. The **/usr** client must have been installed using the remote **/usr** option of the BOS installation.
2. Knowledge of a system editor such as the **vi** editor.

PROCEDURE:

1. On the server machine, create a shared product object tree (SPOT) as described in section "D. Create a Shared Product Object Tree (SPOT)" in "Chapter 10. Diskless System Installation."

2. On the server machine, use the **smit mknfsexp** command to export the file system to be used as the client's **/usr** file system.

Note: Make sure you give the client root access permissions on the file system.

3. On the client machine, edit the **/etc/filesystems** file. Change the *dev* field of the **/usr** stanza to contain the full path name of the directory on the server which is to be used as the client's **/usr** file system.

4. For the change to take effect, you must reboot the client. On the client machine, type the following:

```
shutdown -r  
and press Enter.
```

You have finished changing the directory path on the **/usr** server to be used as the client's **/usr** file system and you are finished with this chapter.

Advanced Path: BOS Installation for User with a /usr Server

Note: Remote access to the /usr file system is not supported over a Fiber Distributed Data Interface (FDDI) network.

A. Complete the BOS Installation Plan

1. Go to "Chapter 16. Planning Your Installation" and complete the BOS Installation Plan.

B. Start the Client System

1. If the system is turned OFF, skip to step 2.
If the system is turned ON, use the **shutdown** command to shut it down.
2. If the system is a RISC System/6000 model 580, 950, 970, or 980, turn the system key to the SERVICE position.
If the system is *not* one of these models, turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.
4. If you are using an ASCII terminal, set the communications, keyboard, and display options as described in step 4 on page 5-12.
5. Flip the system unit power switch to the ON position.
Note: On some models (such as the RISC System/6000 model 580, 950, 970, and 980), the **shutdown** command turns off the system unit but it does not automatically flip the power switch to the OFF position. In this case, flip the power switch to the OFF position and then back to the ON position.
6. If the system is a RISC System/6000 model 580, 950, 970, or 980, wait three seconds and then turn the system key to the SECURE position.
If your system is *not* one of these models, continue with the next step.
7. After several minutes, the 200 code will appear on the three-digit LED display.
8. Insert the BOS CD-ROM, the first BOS tape, or the BOS Boot diskette.
9. Turn the system key to the SERVICE position.
10. Press the yellow system RESET button twice in quick succession.
11. If you are installing from CD-ROM or tape, go to step 14.
12. When c07 appears on the three-digit LED display, insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
13. When c07 appears the second time, insert the BOS Display diskette.
14. When c31 appears on the three-digit LED display, select the device that you want to use as your console.
15. If you are installing from diskettes, insert the BOS Install/Maintenance diskette.
16. At the 3.2 INSTALLATION AND MAINTENANCE screen, enter 3.

17. What type of installation are you performing?

PRESERVATION

- At the METHODS OF INSTALL screen, enter 1.
- Go to the section titled "D. Preservation: Change the Current System Settings."

COMPLETE OVERWRITE

- At the METHODS OF INSTALL screen, enter 2.
- Go to the next section, "C. New or Complete Overwrite: Change the Current System Settings."

NEW

- Go to the next section, "C. New or Complete Overwrite: Change the Current System Settings."

C. New or Complete Overwrite: Change the Current System Settings

1. To change the LOCALE (language), enter 1 and choose the correct locale (language).
2. To change the INPUT Installation Device, enter 2 and choose the correct installation device.
3. To change the DESTINATION Disks, enter 3 and choose your destination disks.
4. To change the STARTUP (Boot) Disk, enter 4 and choose your startup disk.
5. To change the NETWORK Interface to /usr Server, enter 5 and choose network interface.

D. Preservation: Change the Current System Settings

1. To change the LOCALE (language), enter 1 and choose the correct locale (language).
2. To change the INPUT Installation Device, enter 2 and choose the correct installation device.
3. To change the DESTINATION root VG, enter 3 and choose the correct destination root VG.
4. To change the NETWORK Interface to /usr Server, enter 4 and choose the correct network interface.

E. Start the Installation Process

1. From the Current System Settings screen, enter 0 to begin the installation.
2. From the FINAL WARNING screen, enter 0 to start the installation.
3. Choose the **bos.obj** from the Network Install File Selection menu.
4. Enter 0 to continue the installation.
5. When the reboot screen appears, do the following:
 - Remove the CD-ROM, tape, or diskette from the drive.
 - Turn the system key to the NORMAL position.
 - Press Enter to reboot the system.
6. After the system reboots, log in to the system as root.

F. Set Up the Display Device

1. If you are using an HFT, skip to the section titled "H. Read the BOS README File."
2. Enter `export TERM=xxx` where `xxx` is your display name.
3. Enter `chdev -a term=xxx -l zzz` where `xxx` is your display name and `zzz` is the tty device you are using.

G. Setting Up an ASCII Terminal

1. If you are using a non-English Locale (language), do the following:
 - Enter `ls /etc/nls/termmap` to list the available input and output map files.
 - Enter `setmaps -t mapfile` where `mapfile` is from the termmap listing.
 - Enter `chdev -l ttyx -a imap=mapfile -a omap=mapfile` where `x` is the tty device you are using and `mapfile` is from the termmap listing.

H. Read the BOS README File

1. Enter `pg /usr/lpp/bos/README` to read the installation part of the README file.

I. Set the Date and Time

1. Enter `date` to check the system date.
2. If the date is not correct, execute `smit chtz` to change the date.

J. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION

Go to the procedure called "Preservation Installation: Restoring the /etc/filesystems File."

COMPLETE OVERWRITE

Go to the procedure called "Complete Overwrite Installation: Importing Any Nonroot Volume Groups."

NEW

Go to the section called "Where Do I Go Next?"

Preservation Installation: Restoring the /etc/filesystems File

If you are using the "Upgrade Utilities" to restore your configuration, skip this procedure and go to the section called "Where Do I Go Next?"

1. Enter `cd /etc` at the system prompt.
2. Enter `lsvg -o | xargs imfs` to create the mount points for all journaled file systems known to the system.
3. Enter `cp filesystems filesystems.orig` at the system prompt.
4. To merge the current and old filesystems files, enter the following on two lines:

```
( grep -vp "^/usr:" filesystems.old ;  
  egrep -p "^.*usr:" filesystems ) > /tmp/filesystems
```

If the system displays any error messages, repeat step 4.

If the system does not display any messages, continue with 5.

5. Enter `mv /tmp/filesystems /etc` to move the filesystems file from the `/tmp` directory to the `/etc` directory.

6. Enter `lsfs` to verify that the `/etc/filesystems` file is correct.

If the output from the `lsfs` command is correct, continue with step 7.

If the output from the `lsfs` command is not correct, enter `cp filesystems.orig filesystems` and return to step 3.

7. Enter `lsfs -v nfs` to list the NFS file systems in the `/etc/filesystems` file.
8. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
9. Enter `lsfs -v cdrfs` to list the CD-ROM file systems in the `/etc/filesystems` file.
10. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
11. Execute the `smit mountfs` command to mount any journaled file systems.
12. Go to the section titled "Where Do I Go Next?"

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to the next section, "Where Do I Go Next?"

1. Execute `smit importvg` to import and varyon any nonroot volume groups.
2. Execute `smit mountfs` to mount any journaled file systems.
3. Go to the next section, "Where Do I Go Next?"

Where Do I Go Next?

Go to "Chapter 8. Post-Installation Procedures."

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **ls** command, **pax** command, **smit** command, and **sysck** command.

The Backup Overview in *System Management Guide* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *System Management Guide* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *System Management Guide* provides information on mounting files and directories, mount points, and automatic mounts.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

NOTES

OPTIONAL SOFTWARE
INSTALLATION

Chapter 6. Optional Software Installation

After the Base Operating System (BOS) is installed on your system, you can install optional software products. This chapter describes how to use the System Management Interface Tool (SMIT) to install optional software products onto standard workstations.

Note: If BOS is not yet installed on your system, go to "Determining Your Starting Point" (immediately following the Table of Contents).

Note: If you want to install optional software products onto a diskless server, refer to "Chapter 10. Diskless System Installation."

Note: Although the process of installing optional software products and service updates is essentially the same, the procedures in this chapter focus on the unique aspects of installing optional software just after you have installed BOS for the first time. For information about how to update your system by installing service updates, refer to "Chapter 7. Service Updates Installation."

Optional software is software that is *not* automatically installed on your system when you install the Base Operating System (**bos.obj**). Optional software can be *Version 3.2 Software Products*, such as the InfoExplorer and the INed Editor, which are packaged and sold along with BOS. Optional software can also be *Separately Purchased Software Products*, such as AIXwindows and NetWare, which are specially ordered and not sold as part of BOS. In either case, BOS must be installed on your system before you can install optional software.

Note: For a complete list of the Version 3.2 Software Products and the Separately Purchased Software Products, refer to the section entitled List of Optional Software Products in "Chapter 17. Product Information."

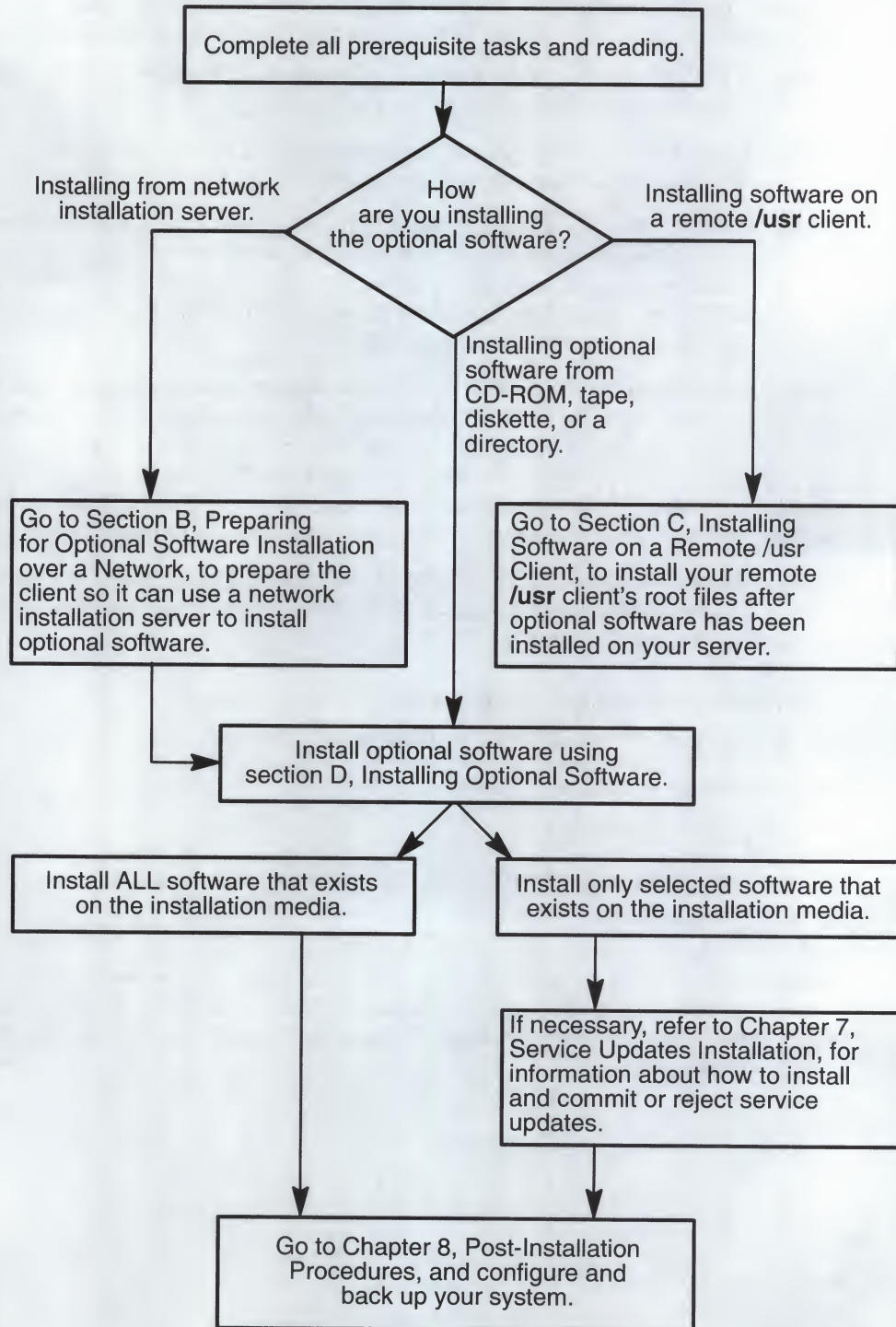
This chapter contains the following sections:

- Flow Chart for Optional Software Installation 6-2
- Prerequisite Tasks and Conditions 6-3
- Installation Procedure 6-4
- Advanced Path: Optional Software Installation 6-24
- Related Information 6-26

Note: Vendors who want information about how to develop software products that are to be installed using the **installp** command should refer to the chapter entitled "Software Product Installation Package Process for Programmers" in *General Programming Concepts*.

Flow Chart for Optional Software Installation

This flow chart outlines the basic steps you must perform to install optional software products from CD-ROM, tape, diskette, network server, or a directory.



Prerequisite Tasks and Conditions

1. BOS Version 3.2 must be installed on your system.

2. One of the following sources of software must be available:

CD-ROM

Do the following only if you are installing from CD-ROM:
Find the CD-ROM that contains the optional software you want to install and insert it into a disc caddy.

Tape

Do the following only if you are installing from tapes:
Find the tape that contains the optional software you want to install.

Diskette

Do the following only if you are installing from diskettes:
Find the diskettes that contain the optional software you want to install.

Image Directory

The **/usr/sys/inst.images** directory, which contains install images.

3. Refer to the documentation that came with your installation media for important information about the optional software you want to install. Then, return here and continue with the next step.
4. You should be familiar with the basic operations of your system's hardware. If you are not, read "Chapter 18. Hardware Basics." Then, return here and continue with the next step.
5. In this chapter, you will be using the System Management Interface Tool (SMIT) to install optional software. If you are not familiar with SMIT, read "Chapter 19. SMIT Basics." Then, return here and continue with the next step.
6. Before you begin using the procedures in this chapter to install optional software products, you may want to read "Appendix A. Optional Software Installation and Update Concepts." Then, return here and continue.

Go to the next section, "Installation Procedure."

Installation Procedure

This chapter contains instructions for the following sections:

- A. Determining Your Starting Point for Installing Optional Software
- B. Preparing for Optional Software Installation over a Network
- C. Installing Optional Software on a Remote /usr Client
- D. Installing Optional Software

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin in the next section, "A. Determine Your Starting Point for Installing Optional Software." This set of instructions contains detailed, step-by-step directions. If, however, you have a thorough knowledge of the BOS and only need a minimal set of instructions, you can skip to page 6-24 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin with section A.

A. Determining Your Starting Point for Installing Optional Software

Depending on your system, do one of the following:

- If you are installing from a network installation server, go to the next section, "B. Preparing for Optional Software Installation over a Network."
- If you are installing a remote **/usr** client, go to section "C. Installing Optional Software on a Remote /usr Client" on page 6-7.
- If you are installing from CD-ROM, tape, diskette, or a directory on your own system, go to the section entitled "D. Installing Optional Software" on page 6-10.

B. Preparing for Optional Software Installation over a Network

If you installed BOS onto the system using the procedures described in "Chapter 4. BOS Installation from a Network" and you did *not* unmount the server's installation image directory after you finished the procedure, go now to section "D. Installing Optional Software" beginning on page 6-10.

If your machine uses a network installation server as the source of the optional software you want to install, your machine is called a *client* of that server. This section describes how to prepare your client machine so that it can use an installation server to install optional software products over a network. If you have never before used the network installation server to install software onto your client machine, you must complete the procedure in this section.

The following procedure describes how to create the mount point on your client machine and then mount from the server (via NFS) the file system that holds the optional software products that you want to install.

PROCEDURE:

1. If you have not already logged in as root on your client machine, do so now.
2. The following software and hardware must already be installed on your client machine:
 - BOS Version 3.2 (**bos.obj**)
 - TCP/IP (**bosnet.tcpip.obj**)
 - NFS (**bosnet.nfs.obj**)

Note: If TCP/IP and NFS are not yet configured, refer to "Chapter 14. Network Configuration" and follow the procedures for configuring this software. Then, return here and continue.

 - An Ethernet, Token-Ring, or Fiber Distributed Data Interface (FDDI) network adapter.
3. On your client machine, list the image directory with the following command:

```
ls /usr/sys/inst.images
```


and press Enter.
4. If the error message `The file /usr/sys/inst.images does not exist` is displayed, continue with step 5.

If this error message does not appear, skip to step 6.
5. Create the image directory with the following command:

```
mkdir -p /usr/sys/inst.images
```


and press Enter.
6. On your client machine, type the following:

```
smit mknfsmnt
```

 (or

```
smit -C mknfsmnt
```

 if you are working in AIXwindows.)
and press Enter.

7. path name of mount point is highlighted.

Type the following:

```
/usr/sys/inst.images
```

Note: Do *not* press Enter until you get to step 10.

8. Move the cursor to path name of remote directory and type the name of the directory on the server that holds the optional software products.

For example, if the installation server was created using the directory name suggested in "Chapter 9. Creating an Installation Server," you would type:

```
/inst.images/risc_sys6000/3.2
```

If a different directory was used, enter that directory's name as the path name of the remote directory.

9. Move the cursor to HOST where remote directory resides and type the name of the network installation server that contains the installation images.

10. To mount the remote file system, press Enter.

11. Press F10 to exit SMIT.

You are now ready to begin the installing optional software products on your client machine. Remember, when you are asked to enter your selection for the INPUT device/directory for software, you should select **/usr/sys/inst.images**.

Where Do I Go Next?

Go to "D. Installing Optional Software" on page 6-10 and continue the installation of optional software on your client machine.

C. Installing Optional Software on a Remote /usr Client

After optional software products have been newly installed on a **/usr** server, the software products' root files must be installed on *each* remote **/usr** client of that server.

You do not need to know the names of the optional software products that have been newly installed on the **/usr** server. The following procedure automatically installs the root files of the new optional software products onto the **/usr** client machine.

Note: When software has been installed on the remote **/usr** server, it is very important that the following procedure be run on your client *before* you boot (start) that client. If this is not done, you may not be able to successfully boot your client machine, depending on the software that was installed.

PROCEDURE:

1. If you are not already logged in as root on your remote **/usr** client machine, do so now.

2. At the system prompt, type the following:

```
smit install (or smit -C install if you are working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

Software Installation and Maintenance

Move cursor to desired item and press Enter.

Install / Update Software
List Installed Software
Manage Applied Software (List, Commit, Reject, Remove)
Verify Correct Software Product Installation
Remote /usr Client Management and Installation
Diskless Client Management

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

3. Select **Remote /usr Client Management and Installation.**

A screen similar to the following displays:

Remote /usr Client Management and Installation

Move cursor to desired item and press Enter.

Install / Update This Client From Remote /usr
List Installed Software
Verify Correct Software Product Installation
Verify Consistent Installation Level

| | | | |
|------------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 = Shell | F10 = Exit | Enter = Do | |

4. Select **Install / Update This Client From Remote /usr.**

A popup similar to the following displays:

ARE YOU SURE?

Continuing may delete information you may want
to keep. This is your last chance to stop
before continuing.

Press Enter to continue.
Press Cancel to return to the application.

| | | |
|------------|--------------|-------------|
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F8 = Image | F10 = Exit | Enter = Do |

5. When you are ready to begin the installation, press Enter.

6. A Command Status screen appears. When the `Command: status` indicator changes to OK, press F10 to exit SMIT.

Note: If no new software with root parts has been installed on your server since the last time you ran this command, you may see two messages displayed. The messages state that no software products were found and that no valid products were left to process. These messages are just indicating that you did not need to perform this procedure and that you can now exit SMIT.

7. If your `/usr` server administrator told you to reboot your system after you completed this procedure, do so now.

You have finished installing the root files of the optional software products onto your `/usr` client machine. Therefore, you are finished with the procedures in this chapter.

D. Installing Optional Software

This procedure describes how to use the System Management Interface Tool (SMIT) to install optional software products onto standard workstations.

PROCEDURE:

1. Go to page 16-24 in "Chapter 16. Planning Your Installation" and complete the Optional Software Installation Plan. Then, return here and continue with the next step.
2. If you have not already logged in as root on the system on which you want to install optional software products, do so now. Then, return here and continue with the next step.
3. If "Chapter 17. Product Information" or the documentation that came with your installation media instructed you to stop any process for a particular software product, do so now.

Note: If the system is a diskless server, you must also stop processes on the diskless clients served by that server.

4. Are you currently accessing InfoExplorer from CD-ROM?

NO: Go to step 5.

YES: If you want to install optional software from the same CD-ROM drive, you must first perform the following procedures before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language (where Language is the name of  
the language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.

Note: During the installation, SMIT will create and mount a temporary mount point for the CD-ROM drive.

5. If you are using CD-ROM, tapes, or diskettes, insert the media that contains the optional software products into the appropriate drive.

6. At the system prompt, type the following:

```
smit install_update
```

(or `smit -C install_update` if you are
working in AIXwindows.)

A screen similar to the following displays:

Install / Update Software

Move cursor to desired item and press Enter.

Install / Update Selectable Software (Custom Install)
Install ALL Software on Installation Media
Copy Software to Hard Disk for Future Installation
Clean Up After a Failed Installation
List All Software on Installation Media
List All Problems Fixed by Software on Installation Media

| | | | |
|------------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 = Shell | F10 = Exit | Enter = Do | |

Now go to the next section, "Where Do I Go Next?," to determine the type of installation you want to perform.

Where Do I Go Next?

You can install optional software in one of the following ways:

Install All Optional Software:

This is the easiest and quickest way to install *all* of the optional software products that exist on the installation media (or directory). You should use this method if your system has plenty of free disk space and if you are sure that you require most or all of the optional software that exists on the installation media.

Warning: This procedure installs *all* of the software that exists on the installation media (or directory). This includes all of the optional software products and all of the service updates (fixes and enhancements to BOS and the optional software) that are applicable to your system.

If lack of disk space on your system is a concern, you may want to install only those optional software products that you specifically choose to install. This is especially true if the installation media contains optional software products that you do not require or that use a lot of disk space. Some customers, for example, may not require AIXwindows or InfoExplorer, both of which use significant amounts of hard disk storage space.

If your system disk space is limited or if you do not require all of the optional software products that exists on the installation media, you should consider installing only selected optional software products.

For instructions on how to install *all* of the software that exists on the installation media, go to the section entitled "Installing All Optional Software" beginning on page 6-13.

Install Only Selected Optional Software:

This procedure provides you with a way of installing only those optional software products and service updates that you specifically choose to install. For instructions, go to "Installing Only Selected Optional Software" beginning on page 6-16.

Installing All Optional Software

This procedure installs *all* of the software that exists on the installation media. This includes *all* of the optional software products as well as *all* of the service updates required by your system.

Warning: If lack of disk space on your system is a concern, you may want to install only those optional software products and service updates that you specifically choose to install. This is especially true if the installation media contains optional software products that you do not require and that use a lot of disk space. If disk space on your system is limited or if you do not require all of the software on the installation media, you should consider using the procedure entitled "Installing Only Selected Optional Software" beginning on page 6-16.

PROCEDURE:

1. From the Install / Update Software menu, select **Install ALL Software on Installation Media**.

Note: Installing with this menu option commits all software and does not save replaced files.

A screen similar to the following displays:

Install ALL Software on Installation Media

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software

[Entry Fields]
[] +

F1 = Help
F5 = Undo
F9 = Shell

F2 = Refresh
F6 = Command
F10 = Exit

F3 = Cancel
F7 = Edit
Enter = Do

F4 = List
F8 = Image

Note: If you know the path name of the installation device or directory from which you want to install the optional software products, type it into the INPUT device / directory for software entry field and press Enter. Then, skip to step 5 and continue.

2. Press F4 to generate a list of installation devices and directories.

A screen similar to the following displays:

Install ALL Software on Installation Media

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

* INPUT device / directory for software [] +

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/rmt0.1 (150 MB 1/4-inch Tape Drive)
/dev/fd0 (Diskette Drive)
/usr/ sys/inst.images

F1 = Help
F8=Image

F2 = Refresh
F10=Exit

F3=Cancel
Enter=Do

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive, and then it uses the temporary mount point as the input device.

Note: When installing with the CD-ROM device using **installp** on the command line, the CD-ROM device must be mounted on a CDROM file system before the command can be issued. The input device/directory (**-d** flag) for the **installp** command must be the directory on which the CD-ROM is mounted.

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3. Move the cursor to highlight the device or directory from which you are installing the software.

| | |
|-----------------|--|
| CD-ROM | Select the name of the CD-ROM drive into which you inserted the software CD-ROM. |
| Tape | Select the name of the tape drive into which you inserted the software tape. |
| Diskette | Select the name of the diskette drive where you inserted your first software diskette. |
| Image Directory | Select the /usr/sys/inst.images directory. |

4. After you have highlighted the installation device or directory, press Enter.

A popup similar to the following displays:

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last chance to stop before continuing.

Press Enter to continue.
Press Cancel to return to the application.

| | | |
|-----------|--------------|-------------|
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F8=Image | F10=Exit | Enter=Do |

5. If you are ready to begin installing *all* of the optional software products (and *all* of the service updates) that exist on the installation media (or directory), press Enter.

Note: If you are *not* ready to begin the installation, press F3 to cancel the operation and return to step 2 on page 6-14.

Where Do I Go Next?

Go to "Completing the Installation and Reading the Status Messages" on page 6-22.

Installing Only Selected Optional Software

This procedure provides you with a way of installing only those optional software products that you choose to install. If lack of disk space on your system is a concern, or if you do not require all of the software on the installation media, you should use this procedure.

PROCEDURE:

1. From the Install / Update Software menu, select **Install / Update Selectable Software (Custom Install)**.

A screen similar to the following displays:

Install / Update Selectable Software (Custom Install)

Move cursor to desired item and press Enter.

Install Software Products at Latest Available Level
Install Maintenance Levels
Install Enhancements
Install Subsystems (Selective Fixes)
Install From All Available Software Packages

| | | | |
|------------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 = Shell | F10 = Exit | Enter = Do | |

2. Select **Install Software Products at Latest Available Level**.

A screen similar to the following displays:

Install Software Products at Latest Available Level

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software [Entry Fields]
[] +

| | | | |
|------------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7 = Edit | F8 = Image |
| F9 = Shell | F10 = Exit | Enter = Do | |

Note: If you know the path name of the installation device or directory from which you want to install the optional software products, type it into the `INPUT device / directory for software` entry field and press Enter. Then, skip to step 6 and continue.

3. Press F4 to generate a list of installation devices and directories.

A screen similar to the following displays:

Install Software Products at Latest Available Level

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

* INPUT device / directory for software [] +

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/rmt0.1 (150 MB 1/4-inch Tape Drive)
/dev/fd0 (Diskette Drive)
/usr/sys/inst.images

F1 = Help
F8=Image

F2 = Refresh
F10=Exit

F3=Cancel
Enter=Do

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive, and then it uses the temporary mount point as the input device.

Note: When installing with the CD-ROM device using **installp** on the command line, the CD-ROM device must be mounted on a CD-ROM file system before the command can be issued. The input device/directory (**-d** flag) for the **installp** command must be the directory on which the CD-ROM is mounted.

4. Move the cursor to highlight the device or directory from which you are installing the optional software.

| | |
|-----------------|--|
| CD-ROM | Select the name of the CD-ROM drive into which you inserted the software CD-ROM. |
| Tape | Select the name of the tape drive into which you inserted the software tape. |
| Diskette | Select the name of the diskette drive where you inserted your first software diskette. |
| Image Directory | Select the /usr/sys/inst.images directory. |

5. After you have highlighted the installation device or directory, press Enter.

A screen similar to the following displays:

Install Software Products at Latest Available Level

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | [Entry Fields] | |
|--|----------------|---|
| * INPUT device / directory for software | /dev/rmt0.1 | |
| * SOFTWARE to install | [ALL] | |
| Automatically install PREREQUISITE software? | yes | + |
| COMMIT software? | yes | + |
| SAVE replaced files? | no | + |
| VERIFY software? | no | + |
| EXTEND file systems if space needed? | yes | + |
| REMOVE input file after installation? | no | + |
| OVERWRITE existing version? | no | + |
| ALTERNATE save directory | [] | + |

F1 = Help
F5 = Undo
F9 = Shell

F2 = Refresh
F6 = Command
F10=Exit

F3 = Cancel
F7=Edit
Enter=Do

F4 = List
F8 = Image

Note: Depending on the install option you choose, some of these fields may not appear on your screen, and the default settings may differ.

6. The `SOFTWARE to install` option is highlighted. Press F4 to display a list of the optional software products that exists on the installation media (or directory).

Note: If you are installing optional software from tape, it may take several minutes for the system to display the listing.

7. If necessary, refer to your "Optional Software Installation Worksheet" for the optional software products and options you want to install.

Note: If you have not yet completed this worksheet, go to page 16-24 in "Chapter 16. Planning Your Installation" and complete it. Then, return here and continue with the next step.

8. Use the Page Up and Page Down keys to scroll through the software listing to find the first optional software product you want to select for installation.

- a. When the name of the optional software product (package) you want to install is highlighted, press F7 to select it. A greater than (>) symbol appears next to the product, indicating that it has been selected. To deselect a previously selected item, move the cursor to highlight that item and press F7.

Note: If you select an optional software product for installation, a selection marker (>) will appear next to the product's name, but no markers will appear next to the product options or service updates under that software product name. All of the product's options and associated updates, however, will be installed along with the product itself.

- b. Continue scrolling through the software list and selecting the optional software products you want to install.

Note: If you exit the software list and return to it again, the list will be cleared of your previous selections. Your previous selections will be lost and you will have to start over and reselect the software products and options you want to install.

9. When you are sure that your selections are correct, press Enter. The dialog options reappear on your screen as they did in step 5.

Note: Only those options that are relevant to the operation you are performing are displayed on this screen.

The system automatically enters the default values for the remaining options. Read the information in the following table to determine if you want to use the default settings. If you want to change the settings, move the cursor to the field and use the Tab key to toggle *yes* or *no*.

| Entry Field | Yes | No |
|--|--|---|
| Automatically install PREREQUISITE software? | (Default) Automatically installs any software that is a prerequisite for the software products you choose to install. | Does <i>not</i> automatically install software that is a prerequisite for the products you choose to install. If the system encounters a missing prerequisite for a software option, the installation of that option fails and the system lists the required prerequisites. |
| COMMIT software? | (The default setting depends on the install option you choose.) Commits all of the software you choose to install. | Applies all of the software you choose to install, but does not commit it. When software is applied, it becomes the active version of the software. |

| Entry Field | Yes | No |
|---------------------------------------|---|--|
| SAVE replaced files? | (The default setting depends on the install option you choose.) Saves existing copies (if any) of the software you are installing until the software is committed. If the installation fails, a cleanup procedure is used to retrieve saved files. To reduce expansions of the <code>/usr</code> and root file systems, consider storing your saved files in an alternate save directory. | Does <i>not</i> save existing copies of the software you are installing. If an update installation fails, the cleanup procedure cannot retrieve saved files. You must reinstall the update if it is marked <code>BROKEN</code> . This setting preserves disk space on your system. |
| VERIFY software? | Instructs the system to perform a checksum in addition to the basic verification of files. | (Default) Instructs the system <i>not</i> to perform a checksum. Only a basic verification will be done. The checksum process can add a significant amount of time to the installation process. |
| EXTEND file systems if space needed? | (Default) Extends file systems if space is needed to install software. Note: Once a file system is extended, it cannot be contracted. It must be deleted to retrieve space. | Does <i>not</i> extend file systems to meet the space requirements of the software you are installing. |
| REMOVE input file after installation? | (This option is valid only if you are installing from a file or directory on your system. If you are installing from tape, diskette, or network, choose the default, <code>no</code> .) Deletes the installation image files of the software products you are installing after installation is complete. An installation image file contains a copy (in backup format) of the software that you are installing and other files the system uses for installation. If you want to recover hard disk space, choose <code>yes</code> . Note: If Automatically install PREREQUISITE software is <code>yes</code> , prerequisite software will be removed. | (Default) Does <i>not</i> delete the installation image files of the software products that you are installing. |
| OVERWRITE existing version? | Allows the reinstallation of the same release level of software that already exists on the system. Note: In order to reinstall software, Automatically install PREREQUISITE software must be set to <code>no</code> . | (Default) Does <i>not</i> allow the reinstallation of the same release level of a software product that already exists on the system. |

| Entry Field | | |
|--------------------------|---|--|
| ALTERNATE save directory | <p>(This is not a <i>yes/no</i> option.) Allows you to specify an alternate directory for the storage of files replaced by an update. Replaced files are stored in the standard save directory structure under the directory you specify. Saved files are used to recover a previous system level upon reject or for cleanup of failed installations. Saved files are deleted upon successful reject and commit operations.</p> <p>Specifying an alternate save directory is useful when there is insufficient space in the default file systems (/ and /usr) or when it is undesirable to</p> | <p>permanently expand these file systems. It may be desirable for the specified directory to be a remote file system. A remote file system must have ample space since the installp command cannot expand remote file systems.</p> <p>Leaving this field blank will cause the default save directories to be used. If you specify an alternate save directory, set the SAVE replaced files field to <i>yes</i>.</p> <p>Refer to "Specifying an Alternate Save Directory" in Appendix A for more information.</p> |

10. When you are satisfied with all the settings on this screen, press Enter.

A popup similar to the following displays:

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last chance to stop before continuing.

Press Enter to continue.
Press Cancel to return to the application.

F1 = Help
F8=Image

F2 = Refresh
F10=Exit

F3 = Cancel
Enter=Do

Note: If you are *not* ready to begin the installation, press F3 to cancel the operation and return to step 6 on page 6-18. Your previous selections will be lost and you will have to reselect the software products and options you want to install.

11. When you are ready to begin installing the software you have selected, press Enter.

Where Do I Go Next?

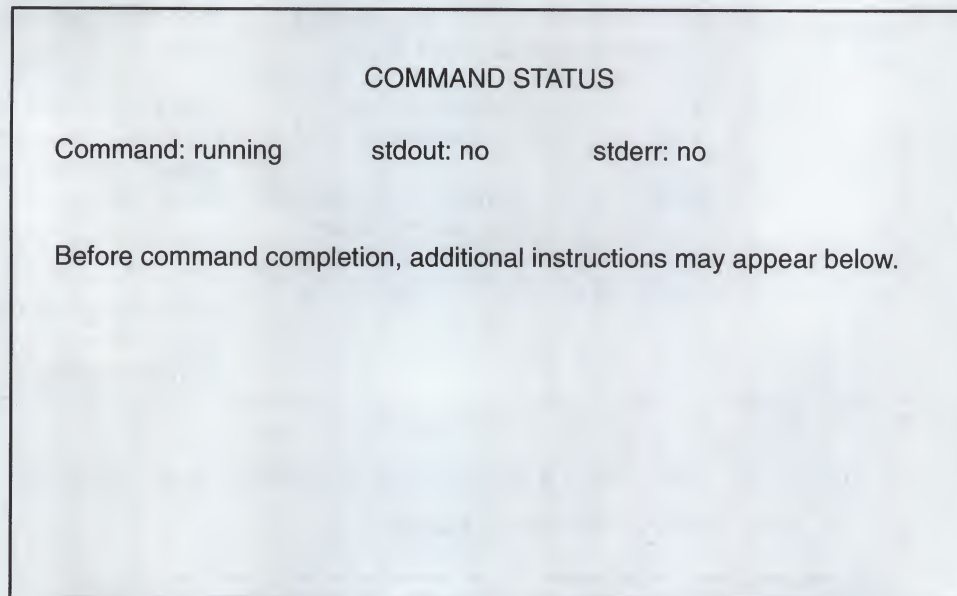
Go to the next section, "Completing the Installation and Reading the Status Messages."

Completing the Installation and Reading the Status Messages

This procedure describes the steps you should take after you have initiated the installation.

PROCEDURE:

1. After you press Enter to initiate the installation, the screen changes and appears similar to the following:



A series of messages will appear as the installation process proceeds. The amount of time the installation process takes will vary according to the amount of software you are installing and the type of system that you have.

Note: During the installation process, the system may prompt you to insert the next tape or diskette by displaying a message similar to the following:

```
Mount volume 2 on /dev/rmt0.
```

```
Press the Enter key to continue.
```

When this message appears, insert the specified tape or diskette into the input device and press Enter.

When the installation process finishes running, the `Command:` status indicator in the upper left corner of the screen will change from `running` to `OK` or `failed`. `OK` means that the installation process ran to completion (even though some options may not have installed successfully). `failed` means that the installation process did not complete.

Note: For a more detailed discussion of the messages that may appear on this screen, refer to "Error Messages and Output from the `installp` Command" on page A-6.

2. When the installation process halts or finishes, the screen returns to the top of the list of messages that were generated during installation.
3. Search the message list to find any error messages that may have been produced or any software that may not have been successfully installed during the installation process. Use the following function keys to review the system message list:
 - Home displays the start of the message list.
 - End displays the bottom line of text.
 - Page Down displays the next screen of text.
 - Page Up displays the previous screen of text.
 - The Up and Down arrow keys move through the message list line by line.
 - a. Use the message list to determine if there were any problems during installation and which software products were involved. For example, space limitations may have been exceeded or prerequisites may not have been selected for some of the software that you installed. The system will list how much extra space is needed or what additional software products must be installed as prerequisites.
 - b. If you have identified a problem with installing a particular software product or option, you are only required to reinstall the software that was marked FAILED or was missing from the "Installp Summary" report. You should also select any prerequisites that may have been missed the first time. You do not need to reinstall the software that was marked SUCCESS in the summary report. If you need to perform the installation again, remove any CD-ROM, tape, or diskette from the drive, press F10 to exit SMIT, and return to step 3 on page 6-10 with the necessary corrections.
 - c. If the installation was interrupted for any reason (for example, a power failure), you may need to use the cleanup procedure before continuing. Press F10 to exit SMIT and refer to the section entitled "Cleanup Procedure for Failed Optional Software Installations" on page 21-10.
 - d. When all of your software on the installation media has been installed successfully, continue with the next step.
4. If you are using diskettes and you have additional optional software to install, do the following:
 - a. Remove the diskette from the diskette drive.
 - b. Insert the first diskette of the software product you want to install into the drive.
 - c. Press F3 to return to the previous screen and continue installing the optional software (and any fixes and enhancements) from diskette.
5. Press F10 to exit SMIT.
6. If you installed the software from a CD-ROM, tape, or diskette, remove the media from its drive.

Where Do I Go Next?

The installation of your optional software is now complete. Before you begin using your system, however, you should complete the procedures in "Chapter 8. Post-Installation Procedures."

Advanced Path: Optional Software Installation

A. Getting Started

1. Log in as root on the system on which you are installing optional software products.
2. Refer to the documentation that came with your installation media for important information about the optional software you want to install.
3. Depending on your system, do one of the following:
 - If you are installing from a network installation server, go to the next section, "B. Preparing for Optional Software Installation over a Network."
 - If you are installing a remote **/usr** client, go to the section titled "C. Installing Optional Software on a Remote **/usr** Client."
 - If you are installing from CD-ROM, tape, diskette, or a directory on your own system, go to the section titled "D. Installing Optional Software."

B. Preparing for Optional Software Installation over a Network

If you installed BOS onto this system using the procedures outlined in "Chapter 4. BOS Installation from a Network," and you did not unmount the server's installation directory after you finished, go to the section entitled "D. Installing Optional Software."

If you have never before used the network server to install software onto this client, you must complete the following procedure:

1. Enter `ls /usr/sys/inst.images` at the system prompt.
2. If the error message `The file /usr/sys/inst.images does not exist` is displayed, enter `mkdir -p /usr/sys/inst.Images` at the system prompt.
3. Execute `smit mknfsmnt` and change the following:
 - path name of mount point `/usr/sys/inst.images`
 - path name of remote directory
 - HOST where remote directory resides.

C. Installing Optional Software on a Remote **/usr** Client

Enter `smit ruinstallp`.

You have finished installing your **/usr** client and you are finished with the procedures in this chapter.

D. Installing Optional Software

1. Go to page 16-24 in "Chapter 16. Planning Your Installation" and complete the Optional Software Installation Plan. Then, return here and continue with the next step.
2. If "Chapter 17. Product Information" or if the documentation that came with your installation media instructed you to stop any process for a particular software product, do so now.

Note: If this system is a diskless server, you must also stop processes on the diskless clients served by this server.

3. Depending on the type of installation you want to perform, do one of the following:
 - To install *all* of the software that exists on the installation media or directory, including all optional software products and service updates (fixes and enhancements to the optional software products and BOS), enter `smit install_all`.
 - To install only the optional software products and service updates (fixes and enhancements to the optional software products and BOS) you choose to install, enter `smit install_latest`.
4. Press F4 to display a list of the available input devices and directories and select the one that contains the installation media.
5. Depending on the type of installation you are performing, do one of the following:
 - If you opted to install *all* of the software, press Enter to initiate the installation and go to step 6.
 - If you opted to install only *selected* software, press F4 to generate a list of the software. Then, use F7 to select the optional software products you want to install. After you select the software you want to install, press Enter. Then, either change or accept the defaults that appear on the screen. When you are ready to initiate the installation, press Enter to install the selected software.
6. When the installation has completed, review the status messages and, if necessary, take appropriate action for any software that failed to install.

The installation of the optional software you selected is now complete. Before you begin using your system, however, you should perform the procedures in "Chapter 8. Post-Installation Procedures."

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **bffcreate** command, **installp** command, **lspp** command, **lppchk** command, **smit** command, and **chprereq** command.

“Appendix A. Optional Software Installation and Update Concepts” in this manual defines the terms and concepts used in this chapter.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *General Programming Concepts* introduces the tools and interfaces that you can use to write application programs for AIX Version 3.2.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

**SERVICE UPDATES
INSTALLATION**

Chapter 7. Service Updates Installation

This chapter describes how to install service updates. A *service update* either corrects a defect in or adds an enhancement to the Base Operating System (BOS) Version 3.2 or an optional software product.

Note: If BOS is not yet installed on your system, go to “Determining Your Starting Point” (immediately following the Table of Contents).

Note: If you want to install service updates onto a diskless server, refer to “Chapter 10. Diskless System Installation.”

Note: Although the process of installing service updates and optional software products is essentially the same, the procedures in this chapter focus on the unique aspects of updating your system. For a more detailed discussion about how to install optional software products, refer to “Chapter 6. Optional Software Installation.”

Service updates are shipped with a separate set of instructions. To install service updates on your system, use the general installation information in this chapter along with the specific installation instructions you have received.

Note: Before you begin using the procedures in this chapter, be sure to refer to the documentation that came with your update media for important information about how to update the install (**installp**) program.

When you have finished using the instructions that came with your service update, insert them into “Chapter 22. Notes” in this manual for future reference.

Note: If you ever need to reinstall your system, be sure to refer to “Chapter 22. Notes” to see if any service updates have been applied to your system. If they have, refer to that document before you reinstall your system.

This chapter contains the following sections:

- Introduction to Service Updates 7-2
- Flow Chart for Service Update Installation 7-8
- Prerequisite Tasks and Conditions 7-9
- Update Procedure 7-10
- Related Information 7-42

Introduction to Service Updates

This introductory section covers the following topics:

- How Service Updates Are Organized 7-2
- Packaging and Contents of Service Updates 7-3
- Committing or Rejecting Service Updates 7-7

How Service Updates Are Organized

Service updates are delivered as *subsystems*. Subsystems are functionally related groups of software components that are part of the same optional software product. Service updates can be divided into the following units:

- A *subsystem (selective fix)* is a group of related fixes that correct specific problems you may be experiencing.
- A *selective enhancement* is code that provides BOS Version 3.2 or an optional software product with new or increased functionality.
- A *maintenance level* is an update that contains all selective enhancements and subsystems (selective fixes) since the last release of AIX. There is one maintenance level for each software product, including BOS.
- The *AIX maintenance level* is an update that contains all subsystems, selective enhancements, and maintenance levels for BOS and for all of the software products installed on your system.

Figure 1 shows that subsystems (selective fixes) and enhancements are part of a maintenance level update. Maintenance level updates and enhancements, in turn, are part of the AIX maintenance level. Although a new software product is not part of the AIX maintenance level, both may be shipped on the same media.

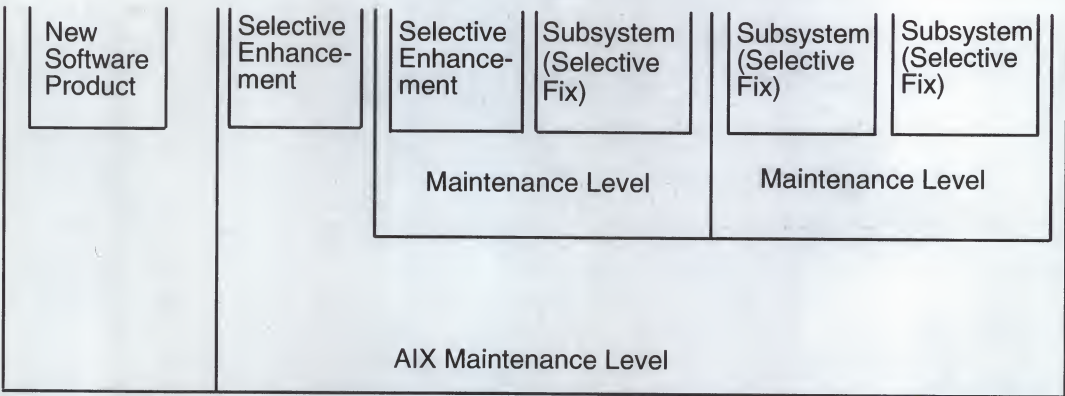


Figure 1. AIX Maintenance Level and New Software Product

Packaging and Contents of Service Updates

This section describes the ways in which you may receive service updates. There are three types of service update packages:

- Preventive Maintenance Package (PMP)
- Release Update Package
- Subsystem (Selective Fix) Package

This section also describes the contents of each of the service update packages, the media label and documentation, and installation choices.

Preventive Maintenance Package (PMP)

A Preventive Maintenance Package contains a maintenance level update for your system, including BOS and each optional software product that is installed on your system.

Figure 2 shows a Preventive Maintenance Package (the AIX maintenance level, comprised of individual maintenance levels, enhancements, and subsystems). In this example, the client subsystem, the SMIT subsystem, and server subsystem make up the TCP/IP application. TCP/IP, in turn, is part of the maintenance level for the BOSNET software product.

Figure 2 also shows an enhancement (a new SCSI disk) and its associated subsystem, the device driver subsystem. Note that the device driver subsystem is also part of the BOS maintenance level.

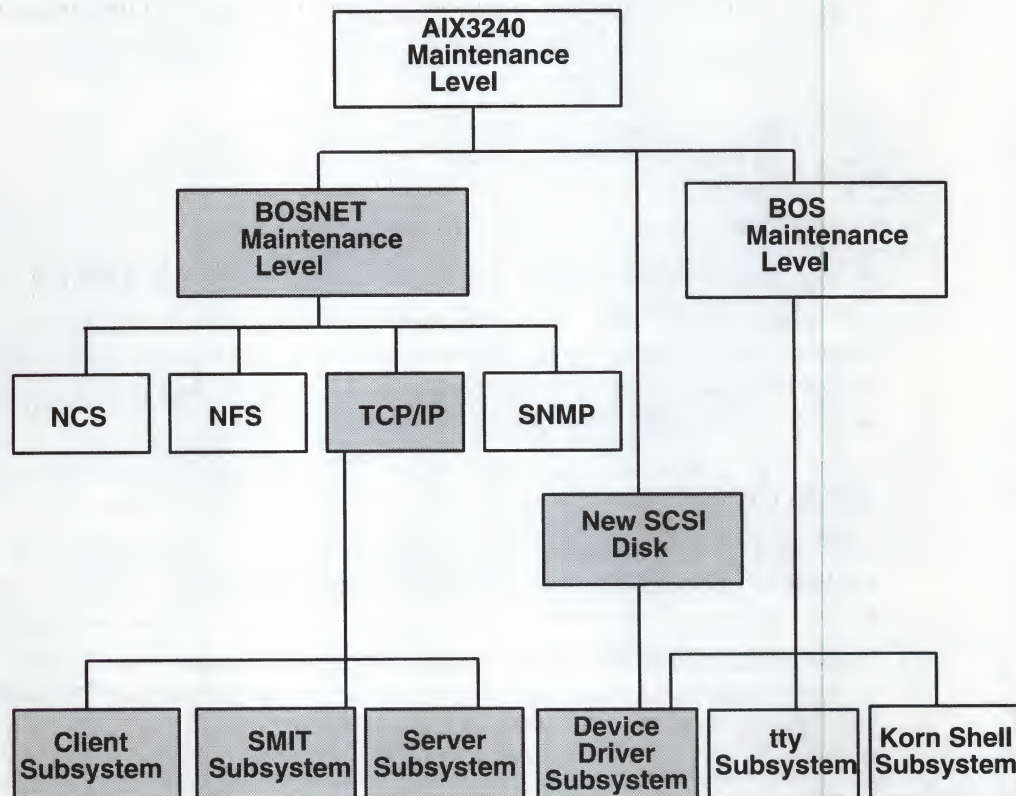


Figure 2. Preventive Maintenance Package (PMP)

If you live in the United States, you order Preventive Maintenance Packages from the Austin Support Center. Non-U.S. customers order Preventive Maintenance Packages through their

country's support structure. For information about how to contact the Austin Support Center, refer to the section titled "Austin Support Center Addresses and Telephone Numbers" on page 21-17.

It is important to read the documentation that is shipped with your update. It contains valuable information that can help you with installation.

- When a Preventive Maintenance Package is shipped to you, it is accompanied by the following documentation:

| | |
|-----------------------|---|
| Cover Letter | Contains general information about updates. |
| Vital PTF Information | Contains special instructions about the updates, including installation instructions. For future reference, you should insert this section into "Chapter 17. Product Information" next to the pages for the product the update fixes. |
| Contents Listing | Lists the updates contained on the media, the release number, and the volume number of the media that was shipped. |

- The label contains the following information describing the contents of the installation media:

| | |
|-------------------|---|
| Descriptive Title | Preventive Maintenance Package. |
| PTF# (fix ID) | A program temporary fix (PTF) number identifies a service update. If multiple service updates were ordered, only the identification number for the first update will be listed. |
| PMR# | When you request a fix for a problem, your request is given a PMR number. This number helps you track the response to your request for a fix. |

You can install the entire Preventive Maintenance Package by selecting the **Install ALL Software on Installation Media** option from the Install / Update Software SMIT menu. This option installs the AIX Maintenance Level, which includes updates for BOS and all of the optional software products you have installed.

You can install portions of the Preventive Maintenance Package in the following ways:

- Install one or more individual maintenance levels by selecting the **Install Maintenance Levels** option from the Install / Update Selectable Software (Custom Install) SMIT menu. Only the software products that correspond to the maintenance levels you select will be updated to their latest versions.
- Install one or more selective enhancements by selecting the **Install Enhancements** option from the Install / Update Selectable Software (Custom Install) SMIT menu.
- Install one or more individual subsystems by selecting the **Install Subsystems (Selective Fixes)** option from the Install / Update Selectable Software (Custom Install) SMIT menu.
- Install any combination of optional software products, maintenance levels, enhancements, and subsystems by selecting the **Install From All Available Software Packages** option from the Install / Update Selectable Software (Custom Install) SMIT menu.

Release Update Package

A *Release Update Package* contains a Preventive Maintenance Package plus any new versions of optional software products you have ordered. You request a release update package at the same time and in the same way that you request a new version of the Base Operating System.

Figure 3 shows an example of the contents of a Release Update Package. The package in this example contains the Preventive Maintenance Package, a new version of the Distributed Computing Environment (DCE) software product, and a new version of the AIXwindows Interface Composer (AIC) software product.

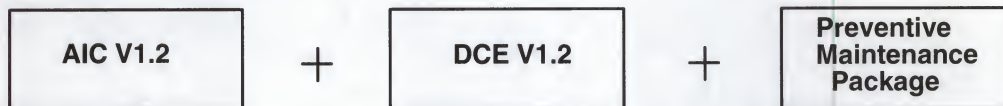


Figure 3. Release Update Package

Included with the Release Update Package installation media is a software packing list and a description of what is contained on the media. The label on the media should contain the name of the Base Operating System version and release, for example AIX/6000 V3.2.4.

You can install the entire Release Update Package by selecting the **Install ALL Software on Installation Media** option from the Install / Update Software SMIT menu. This option installs the Preventive Maintenance Package, and, if you have ordered any new versions of optional software products, such as InfoExplorer or AIXwindows, these products are also installed on your system.

You can install portions of a Release Update Package in the following ways:

- Install one or more optional software products and their corresponding maintenance levels (as well as any associated, last minute enhancements and subsystem fixes) by selecting the **Install Software Products at Latest Available Level** option from the Install / Update Selectable Software (Custom Install) SMIT menu.
- Install one or more individual maintenance level updates by selecting the **Install Maintenance Levels** option from the Install / Update Selectable Software (Custom Install) SMIT menu. Only the corresponding software products will be updated to their latest versions.
- Install one or more individual enhancements by selecting the **Install Enhancements** option from the Install / Update Selectable Software (Custom Install) SMIT menu.
- Install one or more individual subsystems by selecting the **Install Subsystems (Selective Fixes)** option on the Install / Update Selectable Software (Custom Install) SMIT menu.
- Install any combination of optional software products, maintenance levels, enhancements, and subsystems by selecting the **Install From All Available Software Packages** option from the Install / Update Selectable Software (Custom Install) SMIT menu.

Subsystem (Selective Fix) Package

A *subsystem (selective fix) package* is shipped to customers who report specific problems to IBM support centers. These problems are corrected by the group of related fixes that comprise the subsystem (selective fix) package.

- When a subsystem (selective fix) package is shipped to you, it is accompanied by the following documentation:

| | |
|-----------------------|---|
| Cover Letter | Contains general information about updates. |
| Vital PTF Information | Contains special instructions about the updates, including installation instructions. For future reference, you should insert this section into "Chapter 17. Product Information" next to the pages for the product the update fixes. |
| Contents Listing | Lists the updates contained on the media, the release number, and the volume number of the media that was shipped. |

- The label contains the following information describing the contents of the installation media:

| | |
|-------------------|---|
| Descriptive Title | Selective Fix Package |
| PTF# (fix ID) | A program temporary fix (PTF) number identifies a service update. If multiple service updates were ordered, only the identification number for the first update will be listed. |
| PMR# | When you request a fix for a problem, you are given a PMR number for that problem. This number enables you to track the response to your request for a fix. |

If you live in the United States, you receive selective fix packages from the Austin Support Center. Non-U.S. customers receive selective fix packages through their country's support structure. For information about how to contact the Austin Support Center, refer to the section titled "Austin Support Center Addresses and Telephone Numbers" on page 21-17.

To install the entire subsystem (selective fix) package, select the **Install ALL Software on Installation Media** option from the Install / Update Software SMIT menu. A subsystem may include fixes that are related to the one that was reported. Only the subsystems that apply to your system will be installed.

To install one or more individual subsystems, select the **Install Subsystems (Selective Fixes)** option from the Install / Update Selectable Software (Custom Install) SMIT menu.

Committing or Rejecting Updates

When you install updates on your system, the default for some installation options (**Install Enhancements**, **Install Subsystems (Selective Fixes)**, and **Install From All Available Software Packages**) is for the system to save the previous version of the software being updated in case you do not like the changes the update makes to the software. This allows you to return to using the previous version by *rejecting* the update. When you reject an update, the updated version is deleted from the system and the previous version becomes the active version of the software.

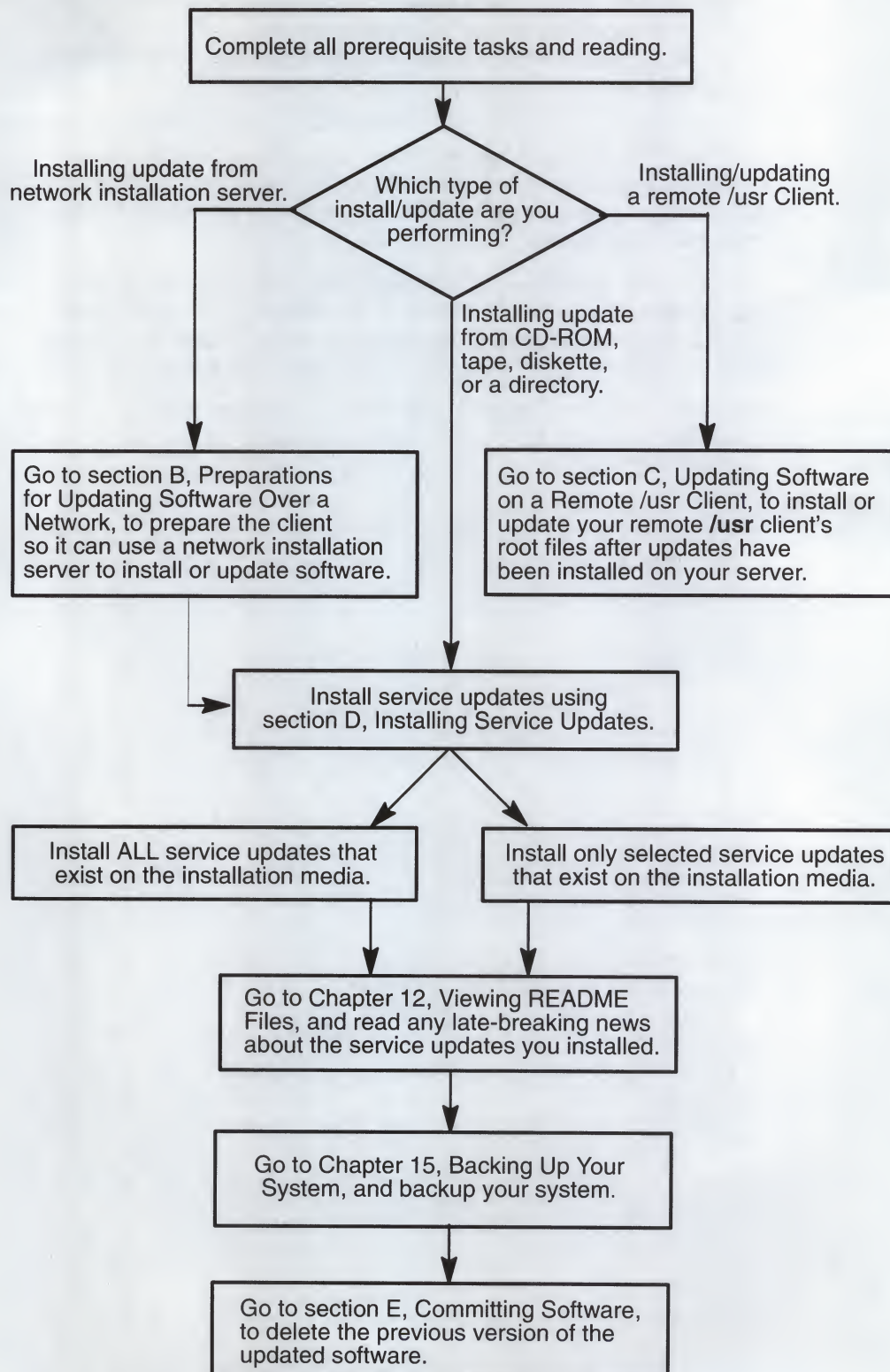
Conversely, if you decide that you prefer the updated version, you can delete the previous version to recover the disk space that was used to store the previous versions. All previous versions are removed when you commit (make a commitment to) the updated version. Note that when you install an update, you can tell the system to commit the new version during the installation process.

After you have been using an updated version for some time and you are sure that you want to keep using it, you should commit it. This makes it faster and easier to reject any new updates you apply at a later date. Before installing a new set of updates, you may want to consider committing any previous updates that have not yet been committed.

Note: For more information about commit and reject, refer to "Appendix A. Optional Software Installation and Update Concepts."

Flow Chart for Service Updates Installation

The following flow chart outlines the basic steps you must perform to install service updates.



Prerequisite Tasks and Conditions

1. BOS Version 3.2 must be installed on your system.

Note: If BOS is not yet installed, go to “Determining Your Starting Point” (immediately following the Table of Contents).

2. One of the following sources of software updates is available:

| | |
|-----------------|--|
| CD-ROM | Do the following only if you are installing from CD-ROM: Find the CD-ROM that contains the optional software you want to install and insert it into a disc caddy. |
| Tape | Do the following only if you are installing from tapes: Find the tape that contains the optional software you want to install. |
| Diskette | Do the following only if you are installing from diskettes: Find the diskettes that contain the optional software you want to install. |
| Image Directory | The /usr/sys/inst.images directory, which contains install images. |

3. If you do not have a current backup of your system, use the procedures in “Chapter 15. Backing Up Your System” and create one. Then, return here and continue with the next step.
4. You should consider placing the system in a state of quiescence by making sure that all users are logged off and all database processes are stopped.
5. You should be familiar with the basic operations of your system's hardware. If you are not, read “Chapter 18. Hardware Basics.” Then, return here and continue with the next step.
6. In this chapter, you will be using the System Management Interface Tool (SMIT) to install optional software. If you are not familiar with SMIT, read “Chapter 19. SMIT Basics.” Then, return here and continue with the next step.
7. Before you begin using the procedures in this chapter to service updates, you may want read “Appendix A. Optional Software Installation and Update Concepts.” Then, return here and continue.
8. Refer to the documentation that came with your installation media for important information about how to update the install (**installp**) program. Then, return here and continue with the next step.

Continue with the next section, “Update Procedure.”

Update Procedure

This chapter contains instructions for the following sections:

- A. Determining Your Starting Point for Service Updates Installation
- B. Preparations for Updating Software Over a Network
- C. Updating Software on a Remote **/usr** Client
- D. Installing Service Updates
- E. Committing Software
- F. Rejecting Updates

Continue with the next section when you are ready to begin the installation.

A. Determining Your Starting Point for Service Updates Installation

To determine your starting point, answer the following questions:

1. Are you updating software?
 - YES: I'm updating software. Go to question 3.
 - NO: I'm committing or rejecting software. Go to question 2.
2. Are you committing software?
 - YES: I'm committing software. Go to "E. Committing Software" on page 7-31.
 - NO: I'm rejecting updates. Go to "F. Rejecting Updates" on page 7-36.
3. Are you using a CD-ROM, tapes, diskettes, or a directory to update your software?
 - YES: I'm using a CD-ROM, tapes, diskettes, or a directory. Go to section "D. Installing Service Updates" on page 7-16.
 - NO: I'm *not* using a CD-ROM, tapes, diskettes, or a directory. Go to question 4.
4. Are you using a network installation server to update your software?
 - YES: I'm using a network installation server. Go to the next section, "B. Preparations for Updating Software over a Network."
 - NO: I'm updating a remote **/usr** client. Go to the section titled "C. Updating Software on a Remote /usr Client" beginning on page 7-13.

B. Preparations for Updating Software over a Network

If your machine uses a network installation server as the source of the software you want to install, your machine is called a *client* of that server.

If you have never before used the network installation server to install software onto your client machine, you must complete the procedure in this section. This section describes how to prepare a client so that it can use a network installation server to update software.

If you have already completed this procedure, go to the section titled "D. Installing Service Updates" on page 7-16.

Note: The following procedures assume that the `/inst.images/risc_sys6000/3.2` directory on the network installation server was used to store the software. If a different directory was used, you should use that directory's name in the following procedure.

This procedure describes how to create the mount point on the client and then mount (via NFS) the file system from the server that holds the installation and update images.

PROCEDURE:

1. If you have not already logged in as root on your client machine, do so now.

2. TCP/IP and NFS must already be installed and configured on your client.

Note: If you need to install TCP/IP and NFS, refer to "Chapter 6. Optional Software Installation." If you need to configure TCP/IP and NFS, refer to "Chapter 14. Network Configuration." Then, return here and continue with the next step.

3. On the client machine where you want to install the software, list the image directory with the following command:

```
ls /usr/sys/inst.images
```

and press Enter.

4. If the error message `The file /usr/sys/inst.images does not exist` is displayed, continue with step 5. If this error message does not appear, skip to step 6.

5. Create the image directory with the following command:

```
mkdir -p /usr/sys/inst.images
```

and press Enter.

6. On the client, type the following:

```
smit mknfsmnt (or smit -C mknfsmnt if you are working in AIXwindows.)
```

and press Enter.

7. The `PATHNAME` of mount point is highlighted.

Note: Do *not* press Enter until you get to step 10.

Type the following:

```
/usr/sys/inst.images
```

8. Move the cursor to `PATHNAME` of remote directory and type the name of the directory on the server that holds the service updates.

For example, if the installation server was created using the directory name suggested in "Chapter 9. Creating an Installation Server," you would type:

```
/inst.images/risc_sys6000/3.2
```

9. Move the cursor to `HOST` where remote directory resides and type the name of the installation server that contains the service updates.

10. To mount the remote file system, press Enter.

11. Press F10 to exit SMIT.

You are ready to begin the update procedure. Remember that when you are asked to enter your selection for the INPUT device/directory for software, you should select `/usr/sys/inst.images`.

Go to the section titled "D. Installing Service Updates" beginning on page 7-16.

C. Updating Software on a Remote /usr Client

The following procedure is used to update your remote **/usr** client's root files after new software products or service updates have been installed on your **/usr** server.

This procedure should be run on *each* remote **/usr** client of the **/usr** server after new products or updates with root parts are installed on the **/usr** server.

When software has been updated on the remote **/usr** server, it is very important that this procedure be run on the client *before* your client system is booted (started). If this is not done, you may not be able to successfully boot your client machine, depending on the software that was updated.

You do not need to know the names of software that have been added or updated in **/usr** on the server. The process will automatically run for all products and updates installed in the server's **/usr** file system.

PROCEDURE:

1. If you have not already logged in as root on your remote **/usr** client machine, do so now.
2. At the system prompt, type:

`smit install` (or type `smit -C install` if you are working in AIXwindows.)
and press Enter.

A screen similar to the following displays:

Software Installation and Maintenance

Move cursor to desired item and press Enter.

Install / Update Software
List Installed Software
Manage Applied Software (List, Commit, Reject, Remove)
Verify Correct Software Product Installation
Remote /usr Client Management and Installation
Diskless Client Management

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

3. Select **Remote /usr Client Management and Installation**.

A screen similar to the following displays:

Remote /usr Client Management and Installation

Move cursor to desired item and press Enter.

Install / Update This Client From Remote /usr
List Installed Software
Verify Correct Software Product Installation
Verify Consistent Installation Level

| | | | |
|------------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 = Shell | F10 = Exit | Enter = Do | |

4. Select **Install / Update This Client From Remote /usr**.

A popup similar to the following displays:

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last chance to stop before continuing.

Press Enter to continue.
Press Cancel to return to the application.

| | | |
|------------|--------------|-------------|
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F8 = Image | F10 = Exit | Enter = Do |

5. If you are ready to begin the installation, press Enter.

6. A Command Status screen appears. When the `Command:` status indicator changes to OK, press F10 to exit SMIT.

Note: If no new software with root parts has been installed on your server since the last time you ran this command, you may see two messages displayed. The messages state that no software products were found and that no valid products were left to process. These messages are just indicating that you did not need to perform this procedure and that you can now exit SMIT.

7. If your `/usr` server administrator told you to reboot your system after you completed this procedure, do so now.

You have finished installing your `/usr` client. Therefore, you are finished with the procedures in this chapter.

D. Installing Service Updates

This procedure describes how to use the System Management Interface Tool (SMIT) to install service updates onto standard workstations.

Note: If you want to install optional software products onto a diskless server, refer to "Chapter 10. Diskless System Installation."

PROCEDURE:

1. If you have not already logged in as root on the system on which you want to install the updates, do so now.
2. Go to "Chapter 17. Product Information" and read the instructions for the software products that you are updating.

Note: If there are any processes that must be stopped when a software product is installed, these processes must also be stopped before the product is updated. Also, if there are any special installation instructions for the software product, these instructions may also have to be followed when updating the product.

3. If the documentation that came with the installation media instructs you to stop any process, stop those processes now.

Warning: You should make sure that all users are logged off and that all database processes are stopped. This will help to avoid any compatibility problems that may be encountered if you attempt to update an active system.

4. Are you currently accessing InfoExplorer from CD-ROM?

NO: Go to step 5.

YES: If you want to install service updates from the same CD-ROM drive, you must first perform the following procedures before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language (where Language is the name of  
the language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.

Note: During the installation, SMIT will create and mount a temporary mount point for the CD-ROM drive.

5. If you are using CD-ROM, tapes, or diskettes, insert the media that contains the service updates into the appropriate drive.

6. At the system prompt, type:

`smit install_update`

(or `smit -C install_update` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

Install / Update Software

Move cursor to desired item and press Enter.

Install / Update Selectable Software (Custom Install)
Install ALL Software on Installation Media
Copy Software to Hard Disk for Future Installation
Clean Up After a Failed Installation
List All Software on Installation Media
List All Problems Fixed by Software on Installation Media

| | | | |
|------------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 = Shell | F10 = Exit | Enter = Do | |

Now go to the next section, "Where Do I Go Next?," to determine how you want to update your system.

Where Do I Go Next?

You can install service updates in one of the following ways:

Install ALL Service Updates:

This is the easiest and quickest way to install *all* of the service updates that exist on the installation media.

Warning: This procedure installs all of the software that exists on the installation media (or directory). If lack of disk space on your system is a concern, you may want to install only those service updates that you specifically choose to install. This is especially true if the installation media contains service updates that you do not require.

If your system disk space is limited or if you do not require all of the service updates that exist on the installation media, you should consider installing only selected service updates.

For instructions on how to install all of the service updates that exist on the installation media, go to the section titled "Installing All Service Updates" beginning on page 7-19.

Install Only Selected Service Updates:

This procedure provides you with a way of installing only those service updates that you specifically choose to install.

Note: Although this procedure focuses on the unique aspects of installing service updates, you can also use this procedure to selectively install any of the optional software products that also exist on the installation media.

For instructions on how to selectively install service updates, go to "Installing Only Selected Service Updates" beginning on page 7-22.

Installing All Service Updates

This procedure installs *all* of the software that exists on the installation media (or directory). This includes all of the service updates and all of the optional software products.

Warning: If lack of disk space on your system is a concern, you may want to install only those service updates and optional software products that you specifically choose to install. This is especially true if the installation media contains optional software products that you do not require, uses a lot of disk space, or contains a number separately installable product options. If your system disk space is limited or if you do not require all of the software on the installation media, you should consider using the procedure titled "Installing Only Selected Service Updates" beginning on page 7-22.

PROCEDURE:

1. From the Install / Update Software menu, select **Install ALL Software on Installation Media**.

Note: Installing with this menu option commits all software and does not save replaced files.

A screen similar to the following displays:

Install ALL Software on Installation Media

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software

[Entry Fields]
[] +

F1 = Help
F5 = Undo
F9 = Shell

F2 = Refresh
F6 = Command
F10 = Exit

F3 = Cancel
F7 = Edit
Enter = Do

F4 = List
F8 = Image

Note: If you know the pathname of the installation device or directory from which you want to install service updates, type it into the `INPUT device / directory for software` entry field and press Enter. Then, skip to step 5 and continue.

2. Press F4 to generate a list of installation devices and directories.

A screen similar to the following displays:

Install ALL Software on Installation Media

Type or select a value for the entry field.

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
/dev/rmt0.1 (2.3 GB 8mm Tape Drive) /dev/
rmt1.1 (150 MB 1/4-inch Tape Drive) /dev/
fd0 (Diskette Drive)
/usr/sys/inst.images

| | | |
|-----------|--------------|-----------|
| F1 = Help | F2 = Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive, and then it uses the temporary mount point as the input device.

Note: When installing with the CD-ROM device using **installp** on the command line, the CD-ROM device must be mounted on a CDROM file system before the command can be issued. The input device / directory (**-d** flag) for the **installp** command must be the directory on which the CD-ROM is mounted.

3. Move the cursor to highlight the device or directory from which you are installing the service updates (and optional software).

| | |
|-----------------|--|
| CD-ROM | Select the name of the CD-ROM drive into which you inserted the software CD-ROM. |
| Tape | Select the name of the tape drive into which you inserted the software tape. |
| Diskette | Select the name of the diskette drive where you inserted your first software diskette. |
| Image Directory | Select the /usr/sys/inst.images directory. |

4. After you have highlighted the installation device or directory, press Enter.
A popup similar to the following displays:

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last chance to stop before continuing.

Press Enter to continue.
Press Cancel to return to the application.

| | | |
|-----------------------|--------------------------|-------------------------|
| F1 = Help F8=Image | F2 = Refresh F10=Exit | F3 = Cancel Enter=Do |
|-----------------------|--------------------------|-------------------------|

5. If you are ready to begin installing *all* of the service updates (and *all* of the optional software products) that exist on the installation media (or directory), press Enter.

Note: If you are *not* ready to begin the installation, press F3 to cancel the operation and return to step 2 on page 7-20.

Where Do I Go Next?

Go to "Completing the Installation and Reading the Status Messages" on page 7-28.

Installing Only Selected Service Updates

This procedure provides you with a way of installing only those service updates that you specifically choose to install. If lack of disk space is a concern or if you do not require all of the service updates that exist on the installation media, you should use this procedure.

PROCEDURE:

1. From the Install / Update Software menu, select **Install / Update Selectable Software (Custom Install)**.

A screen similar to the following displays:

Install / Update Selectable Software (Custom Install)

Move cursor to desired item and press Enter.

Install Software Products at Latest Available Level
Install Maintenance Levels
Install Enhancements
Install Subsystems (Selective Fixes)
Install From All Available Software Packages

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

2. Depending on how you want to update your system, select an option from the Install/Update Selectable Software (Custom Install) menu.

A screen similar to the following displays:

Note: The screen titles in the remainder of this procedure depend on the option you select from the Install/Update Selectable Software (Custom Install) menu.

*This Title Changes Depending On the Option You Selected From the
Install / Update Selectable Software (Custom Install) Menu*

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software [Entry Fields]
[] +

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

Note: If you know the pathname of the installation device or directory from which you want to install service updates, type it into the INPUT device / directory for software entry field and press Enter. Then, skip to step 6.

3. Press F4 to generate a list of installation devices and directories.

A screen similar to the following displays:

*This Title Changes Depending On the Option You Selected From the
Install / Update Selectable Software (Custom Install) Menu*

Type or select a value for the entry field.

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/rmt1.1 (150 MB 1/4-inch Tape Drive)
/dev/fd0 (Diskette Drive)
/usr/sys/inst.images

| | | |
|-----------|--------------|-----------|
| F1 = Help | F2 = Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive, and then it uses the temporary mount point as the input device.

Note: When installing with the CD-ROM device using **installp** on the command line, the CD-ROM device must be mounted on a CDRom file system before the command can be issued. The input device / directory (**-d** flag) for the **installp** command must be the directory on which the CD-ROM is mounted.

4. Move the cursor to highlight the device or directory from which you are installing the service updates.

CD-ROM Select the name of the CD-ROM drive into which you inserted the software CD-ROM.

Tape Select the name of the tape drive into which you inserted the software tape.

Diskette Select the name of the diskette drive where you inserted your first software diskette.

Image Directory Select the **/usr/sys/inst.images** directory.

5. After you have highlighted the installation device or directory, press Enter.

A screen similar to the following displays:

| | | | |
|--|----------------|-------------|------------|
| <i>This Title Changes Depending On the Option You Selected From the Install / Update Selectable Software (Custom Install) Menu</i> | | | |
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| | [Entry Fields] | | |
| * INPUT device / directory for software | /dev/rmt0.1 | | |
| * SOFTWARE to install | [ALL] | | |
| Automatically install PREREQUISITE software? | yes | | + |
| COMMIT software? | yes | | + |
| SAVE replaced files? | no | | + |
| VERIFY software? | no | | + |
| EXTEND file systems if space needed? | yes | | + |
| REMOVE input file after installation? | no | | + |
| OVERWRITE existing version? | no | | + |
| ALTERNATE save directory | [] | | + |
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

Note: Depending on the type of operation you are performing, some of these options may not appear on your screen, and the default settings may differ.

If you choose the **Install Software Products at Latest Available Level** option or the **Install Maintenance Levels** option from the **Install/Update Selectable Software (Custom Install)** menu, the default setting for the **COMMIT software** field is **yes**, and the default setting for the **SAVE replaced files** field is **no**. It is strongly recommended that you commit the maintenance level to receive all fixes issued since the base level release. If your disk space is limited, you can save space in the **/usr** and root file systems by not saving replaced files.

6. The `SOFTWARE to install` option is highlighted.

Press F4 to display a list of the service updates that exist on the installation media (or directory). The content of this list depends on which option you selected from the Update/Install Selectable Software (Custom Install) menu.

Note: If you are updating from tape, the listing may take several minutes to display.

- If you selected the **Install Software Products at Latest Available Level** option, a list of *only* the software products that exist on the installation media is displayed.
- If you selected the **Install Maintenance Levels** option, a list of *only* the maintenance levels that exist on the installation media is displayed.
- If you selected the **Install Enhancements** option, a list of *only* the enhancements that exist on the installation media is displayed.
- If you selected the **Install Subsystems (Selective Fixes)** option, a list of *only* the subsystems that exist on the installation media is displayed.
- If you selected the **Install From All Available Software Packages** option, a list of all of the optional software products, maintenance levels, enhancements, and subsystems that exist on the installation media is displayed.

7. Use the Page Up and Page Down keys to scroll through the listing.

- a. When a service update that you want to install is highlighted, press F7 to select it. A greater than (>) symbol appears next to the service update you select, indicating that it has been selected. To deselect a previously selected item, move the cursor to highlight that item and press F7.

- b. Continue selecting those service updates you want to install.

Note: If you exit the update list and return to it again, the list will be cleared of your previous selections. Your previous selections will be lost, and you will have to start over and reselect the service updates you want to install.

8. When you are sure that your selections are correct, press Enter. The dialog options reappear on your screen as they did in step 5.

Note: Only those options that are relevant to the operation you are performing are displayed on this screen.

The system automatically enters the default values for the remaining entry fields. Read the information in the following table to determine if you want to use the default settings. To change the settings, highlight the field and use the Tab key to toggle `yes` or `no`.

| Entry Field | Yes | No |
|--|---|---|
| Automatically install PREREQUISITE software? | (Default) Automatically installs any software that is a prerequisite for the updates you choose to install. Note: This option is not displayed when installing only maintenance levels or only enhancements. | Does <i>not</i> automatically install prerequisite software for the updates you choose to install. If the system encounters a missing prerequisite for an update, the installation fails and the system lists the required prerequisites. |
| COMMIT software? | (The default setting depends on the install option you choose.) Commits all of the updates you choose to install. | Applies all of the updates you choose to install, but does not commit them. When software is applied to the system, it becomes the active version of the software. |

| Entry Field | Yes | No |
|---------------------------------------|---|--|
| SAVE replaced files? | (The default setting depends on the install option you choose.) Saves existing copies (if any) of the software you are installing until the software is committed. If the installation fails, a cleanup procedure is used to retrieve saved files. To reduce expansions of the /usr and root file systems, store your saved files in an alternate save directory. | Does <i>not</i> save existing copies of the software you are installing. If an update installation fails, the cleanup procedure cannot retrieve saved files. You must reinstall the update if it is marked BROKEN . This setting preserves disk space on your system. |
| VERIFY software? | Instructs the system to perform a checksum in addition to the basic verification of files. | (Default) Instructs the system <i>not</i> to perform a checksum. Only a basic verification will be done. The checksum process can add a significant amount of time to the installation process. |
| EXTEND file systems if space needed? | (Default) Extends file systems if space is needed to install software. Note: Once a file system is extended, it cannot be contracted. It must be deleted to retrieve space. | Does <i>not</i> extend file systems to meet the space requirements of the software you are installing. |
| REMOVE input file after installation? | (This option is only valid if you are installing from a file or directory. If you are installing from tape, diskette, or network, choose the default, no .) Deletes the installation image files of the software products you are installing after installation is complete. An installation image file contains a copy (in backup format) of the software that you are installing and other files the system uses for installation. If you want to recover hard disk space, choose yes . Note: If Automatically install PREREQUISITE software is yes , prerequisite software will be removed. | (Default) Does <i>not</i> delete the installation image files of the software that you are installing. |
| OVERWRITE existing version? | Allows the reinstallation of the same release level of software that already exists on the system. Note: In order to reinstall software, Automatically install PREREQUISITE software must be set to no . | (Default) Does <i>not</i> allow the reinstallation the same release level of software that already exists on the system. |

Entry Field

ALTERNATE save
directory

(This is not a *yes/no* option.) Allows you to specify an alternate directory for the storage of files replaced by an update. Replaced files are stored in the standard save directory structure under the directory you specify. Saved files are used to recover a previous system level upon reject or for cleanup of failed installations. Saved files are deleted upon successful reject and commit operations.

Specifying an alternate save directory is useful when there is insufficient space in the default file systems (/ and /usr) or when it is undesirable to

permanently expand these file systems. It may be desirable for the specified directory to be a remote file system. A remote file system must have ample space since the **installp** command cannot expand remote file systems.

Leaving this field blank will cause the default save directories to be used. If you specify an alternate save directory, *SAVE replaced files?* must be set to *yes*.

Refer to "Specifying an Alternate Save Directory" in Appendix A for more information.

9. When you are satisfied with all the settings on this screen, press Enter.

A popup similar to the following displays:

| | | |
|---|--------------------------|-------------------------|
| ARE YOU SURE? | | |
| Continuing may delete information you may want to keep. This is your last chance to stop before continuing. | | |
| Press Enter to continue. Press Cancel to return to the application. | | |
| F1 = Help F8=Image | F2 = Refresh F10=Exit | F3 = Cancel Enter=Do |

Note: If you are *not* ready to begin installing the service updates (and any software products) you selected, press F3 to cancel the operation and return to step 6 on page 7-25. Your previous selections will be lost and you will have to reselect the updates and software you want to install.

10. When you are ready to begin installing the software you have selected, press Enter.

Where Do I Go Next?

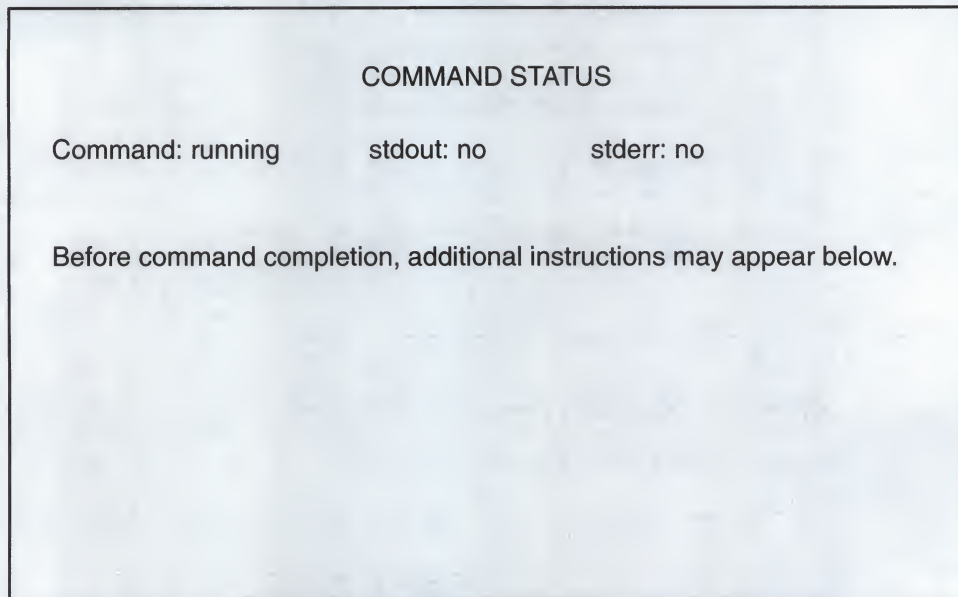
Go to the next section, "Completing the Installation and Reading the Status Messages."

Completing the Installation and Reading the Status Messages

This procedure describes the steps you should take after you have initiated the installation of the service updates you have selected to install.

PROCEDURE:

1. After you press Enter to initiate the installation, the screen changes and appears similar to the following:



A series of messages will appear as the installation process proceeds. The amount of time the installation process takes will vary according to the amount of software you are installing and the type of system that you have.

Note: During the installation process, the system may prompt you to insert the next tape or diskette by displaying a message similar to the following:

Mount volume 2 on /dev/rmt0.

Press the Enter key to continue.

When this message appears, insert the specified tape or diskette into the input device and press Enter.

When the installation process finishes running, the `Command: status` indicator in the upper left corner of the screen will change from `running` to `OK` or `failed`. `OK` means that the installation process ran to completion (even though some options may not have installed successfully). `failed` means that the installation process did not complete.

Note: For a more detailed discussion of the messages that may appear on this screen, refer to "Error Messages and Output from the `installp` Command" on page A-6.

2. When the installation process halts or finishes, the screen returns to the top of the list of messages that were generated during installation.
3. Search the message list to find any error messages that may have been produced or any software that may not have been successfully installed during the installation process. Use the following function keys to review the system message list:
 - Home displays the start of the message list.
 - End displays the bottom line of text.
 - Page Down displays the next screen of text.
 - Page Up displays the previous screen of text.
 - The Up and Down arrow keys move through the message list line by line.
 - a. Use the message list to determine if there were any problems during installation and which service updates or software products were involved. For example, space limitations may have been exceeded or prerequisites may not have been selected for some of the software that you installed. The system will list how much extra space is needed or which additional software must be installed as prerequisites.
 - b. If you have identified a problem with installing a particular service update or software product, you are only required to reinstall the service update or software product that was marked FAILED or was missing from the "Installp Summary" report. You should also select any prerequisites that may have been missed the first time. You do not need to reinstall the service update or software product that was marked SUCCESS in the summary report. If you need to perform the installation again, remove the CD-ROM, tape, or diskette from the drive, press F10 to exit SMIT, and return to step 3 on page 7-16 with the necessary corrections.
 - c. If the installation was interrupted for any reason (for example, a power failure), you may need to use the cleanup procedure before continuing. Press F10 to exit SMIT and refer to the section titled "Cleanup Procedure for Failed Optional Software Installations" on page 21-10.
 - d. When all of your software has been installed successfully, continue with the next step.
4. If you are using diskettes and you have additional optional software to install, do the following:
 - a. Remove the diskette from the diskette drive.
 - b. Insert the first diskette of the software product you want to install into the drive.
 - c. Press F3 to return to the previous screen and continue installing the service updates (and optional software products) from diskette.
5. Press F10 to exit SMIT.
6. If you installed the software from a CD-ROM, tape, or diskette, remove the media from its drive.

7. If the machine you have just updated is a **/usr** server, you must notify your client machine operators that they should immediately update their machines using the instructions in the section titled “C. Updating Software on a Remote /usr Client” beginning on page 7-13.
8. If the documentation that came with the service update media instructed you to reboot the system you are updating, reboot it now.

Note: If the machine you have just updated is a **/usr** server, you must reboot all of the /usr clients of the server after you complete the section titled “C. Updating Software on a Remote /usr Client” beginning on page 7-13.

Where Do I Go Next?

The installation of your service updates is now complete. There are two other things you may want to do before you begin using your system:

- The service updates you just installed may contain new README files with late-breaking news about the software. To view the README files, refer to “Chapter 12. Viewing README Files.”
- You may want to create a new backup of your system. If you do, refer to “Chapter 15. Backing Up Your System.”

E. Committing Software

Note: If you use the **Install ALL Software on Installation Media**, **Install Software Products at Latest Available Level**, or **Install Maintenance Levels** option to install your software, the default settings are to commit the software and to not save replaced files.

If you decide that you prefer the updated version of your software, you can commit to the update. This deletes the previous version of the updated software and recovers the disk space that was used to store the previous versions. All previous versions are removed when you commit (make a commitment to) the updated version. Note that when you install an update, you can tell the system to commit the new version during the installation process. Use this technique if you do not have enough disk space to install the update without removing the previous version.

To commit an update, use the following procedure:

1. If you are not already logged in as root, log in as root now.
2. Do you know the update (fix) identification number of the update you want to commit?

YES: Go to step 4 on page 7-33.

NO: Continue with step 3.

3. The update (fix) ID is listed on the paper documentation that came with the update.

If you have that documentation, go to step 4 on page 7-33.

If you do not have that documentation, use the following steps to find the update (fix) ID.

- a. Type the following:

```
smit lslpp_installed (or type smit -C lslpp_installed if you are
                    working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| List Installed Software | | | |
|---|----------------|-------------|------------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| * SOFTWARE name | [Entry Fields] | | |
| SHOW superseded levels? | [all] | | + |
| | no | | + |
| | | | |
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

- b. SOFTWARE name is highlighted. Press F4 to list the software products.

A screen similar to the following displays:

List Installed Software

SOFTWARE name

Move cursor to desired item and press F7.
 ONE OR MORE items can be selected.
 Press Enter AFTER making all selections.

[TOP]

| # | Name | State | Description |
|------------|--------------------------|---------|---------------------------|
| # | | | |
| # | #Path: /usr/lib/objrepos | | |
| | bos.obj | COMMIT | The Base Operating System |
| # | | | |
| | bsmEn_US.msg | APPLIED | Base System Messages |
| [MORE...9] | | | |

F1 F5 F9

F1 = Help
F7 = Select
Enter=Do

F2 = Refresh
F8 = Image

F3 = Cancel
F10 =Exit

- c. Move the cursor to highlight the software product that was updated by the update you want to commit. Press F7 to select it, and then press Enter.
- d. When the List Installed Software screen reappears, SHOW superseded levels? is highlighted. Press the Tab key to change the default to yes.
- e. To initiate the process of committing the software, press Enter.

A Command Status screen similar to the following displays:

COMMAND STATUS

Command: OK stdout: yes stderr: no

Before command completion, additional instructions may appear below

| Description | State | Fix ID |
|---------------------|-------|------------|
| INed.obj 3.2.0.0 | | |
| INed Editor | C | |
| Update Package | A | SS20223 |
| | | Supersedes |
| Update Package | - | SU20223 |
| Update Package | - | U402727 |
| Update Package | - | U403979 |
| Update Package | - | U405052 |
| [MORE . . . 3891] | | |

F1= Help
F8=Image

F2= Refresh
F9=Shell

F3= Cancel
F10=Exit

F6=Command

- f. Wait for the `Command: status` indicator to change to OK.
- g. Use the Up/Down arrow keys or the Page Up and Page Down keys to scroll through the list. At the bottom of the listing is a description of the State Codes. These code descriptions are as follows:

| | |
|---|---|
| A | Applied |
| B | Broken |
| C | Committed |
| N | Not installed but previously installed/seen on some media |
| - | Superseded, not Applied |
| ? | Inconsistent State . . . Run <code>lppchk -v</code> |

You can only commit updates that are in the Applied (A) state. When you find an applied update that you want to commit, write down its number from the `Fix ID` column and continue with the next step.

- h. Press F10 to exit SMIT.

4. Type the following:

```
smit install_commit      (or type smit -C install_commit if you are
                        working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

Commit Applied Software (Remove Previous Version)

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | | |
|--|----------------|---|
| * SOFTWARE name | [Entry Fields] | |
| COMMIT older version if above version uses it? | [all] | + |
| EXTEND file systems if space is needed? | yes | + |
| | yes | + |

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

5. SOFTWARE name is highlighted. Press F4 to list the software that has not already been committed.

A screen similar to the following displays:

Commit Applied Software (Remove Previous Version)

SOFTWARE name

Move cursor to desired item and press F7.
ONE OR MORE items can be selected.
Press Enter AFTER making all selections.

[TOP]

| # | Name | Level |
|------------|---------|-------------------------|
| # | | |
| | bos.obj | 03.02.0000.0000.U401962 |
| | bos.obj | 03.02.0000.0000.U401963 |
| | bos.obj | 03.02.0000.0000.U401968 |
| [MORE...9] | | |

F1 F1 = Help F2 = Refresh F3 = Cancel

F5 F7 = Select F8 = Image F10 =Exit

F9 Enter=Do

The **Name** column shows the name of the software that was updated. The **Level** column lists the updates and identifies them by listing their identification (ID) number. The ID is the number after the last decimal point in the level number. For updates shipped by IBM, this number starts with "U4." In the example, the first update in the list updates the **product bos.obj** (level 3.02) and its ID number is U401962.

6. Move the cursor to highlight the software you want to commit. When the software you want to commit is highlighted, press F7 to select it. The > (greater than) symbol appears next to each item you select to indicate that it will be committed. To deselect a previously selected item, move the cursor to highlight the item and press F7.

When you are sure that your selections are correct, press Enter. The Commit Applied Software screen reappears.

7. To commit the software, press Enter.

A screen and popup similar to the following displays:

Commit Applied Software (Remove Previous Version)

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

* SOFTWARE
COMMIT
EXTENSION

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last change to stop before continuing.
Press Enter to continue.
Press Cancel to return to the application

F1 = Help F2 = Refresh F3 = Cancel
F5 = Undo F8 = Image F10 = Exit Enter = Do

[Entry Fields]

+
+
+

= List
= Image

8. Press Enter again.

A Command Status screen similar to the following displays:

COMMAND STATUS

Command: RUNNING stdout: yes stderr: no

Before command completion, additional instructions may appear below

[TOP]

install: Performing requisite checking.
(This may take several minutes.)

install: The following software products will be committed:
bos.data at level 3.2.0.0
bsmEn_US.msg at level 3.2.0.0
bsl.en_US.pc.loc at level 3.2.0.0
bsl.en_US.aix.loc at level 3.2.0.0

[MORE...107]

F1= Help F2= Refresh F3= Cancel F6=Command
F8=Image F9=Shell F10=Exit

9. When the Command: status indicator changes to OK, press F10 to exit SMIT.

Where Do I Go Next?

You are finished with the commit procedure. Depending on your system, there are two other things you may want to do:

- If you now need to install updates onto a *standard* system, go back to the section in this chapter titled "A. Determining Your Starting Point" on page 7-10.
- If you are installing onto a *diskless* system, go to "Part 3. Installing and Updating Optional Software" on page 10-47.

F. Rejecting Updates

Note: If you use the **Install ALL Software on Installation Media**, **Install Software Products at Latest Available Level** or **Install Maintenance Levels** option to install your software, the default settings are to commit the software and to not save replaced files.

When you *reject* an update, the updated version is deleted from the system and the previous version becomes the active version of the software.

To reject an updated version of your software, use the following procedure:

1. If you are not already logged in as root, log in as root now.
2. Do you know the update (fix) identification number (ID) of the update you want to reject?

YES: Go to step 4 on page 7-38.

NO: Continue with step 3.

3. The update (fix) ID is listed on the paper documentation that came with the update.

If you have that documentation, go to step 4 on page 7-38.

If you do not have that documentation, use the following steps to find the update (fix) ID.

- a. Type the following:

`smit lslpp_installed` (or type `smit -C lslpp_installed` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

List Installed Software

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | | |
|-------------------------|----------------|---|
| * SOFTWARE name | [Entry Fields] | |
| SHOW superseded levels? | [all] | + |
| | no | + |

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

- b. SOFTWARE name is highlighted. Press F4 to list the software products.

A screen similar to the following displays:

List Installed Software

SOFTWARE name

Move cursor to desired item and press F7.
 ONE OR MORE items can be selected.
 Press Enter AFTER making all selections.

[TOP]

| # Name | State | Description |
|--------------------------|-----------|---------------------------|
| # _____ | _____ | _____ |
| #Path: /usr/lib/objrepos | | |
| bos.obj | COMMITTED | The Base Operating System |
| # _____ | _____ | _____ |
| bsmEn_US.msg | APPLIED | Base System Messages |
| [MORE...9] | | |

F1 = Help

F7 = Select

Enter=Do

F2 = Refresh

F8 = Image

F3 = Cancel

F10 =Exit

- c. Move the cursor to highlight the software product that was updated by the update you want to reject. Press F7 to select it, and then press Enter.
- d. When the List Installed Software screen reappears, SHOW supersede levels? is highlighted. Press the Tab key to change the default to yes.
- e. To initiate the process of rejecting the software, press Enter.

A Command Status screen similar to the following displays:

COMMAND STATUS

Command: RUNNING stdout: yes stderr: no

Before command completion, additional instructions may appear below

| Description | State | Fix ID |
|---------------------|-------|------------|
| INed.obj 3.2.0.0 | | |
| INed Editor | C | |
| Update Package | A | SS20223 |
| | | Supersedes |
| Update Package | — | SU20223 |
| Update Package | — | U402727 |
| Update Package | — | U403979 |
| Update Package | — | U405052 |
| [MORE . . . 3891] | | |

F1= Help

F8=Image

F2= Refresh

F9=Shell

F3= Cancel

F10=Exit

F6=Command

- f. Wait for the `Command:` status indicator to change to OK.
- g. Use the Up/Down arrow keys or the Page Up and Page Down keys to scroll through the list. At the bottom of the listing is a description of the State Codes. These code descriptions are as follows:

| | |
|---|---|
| A | Applied |
| B | Broken |
| C | Committed |
| N | Not installed but previously installed/seen on some media |
| - | Superseded, not Applied |
| ? | Inconsistent State . . . Run <code>lppchk -v</code> |

You can only reject updates that are in the Applied (A) state. When you find an applied update that you want to reject, write down its number from the `Fix ID` column and continue with the next step.

- h. Press F10 to exit SMIT.

4. A *prerequisite* is a separate piece of software that must be installed before a specific update can be installed. A prerequisite can be a software product or it can be another update. When you are rejecting an update, you can recover additional disk space by removing any prerequisite software that was installed with the update *as long as that software is not also required by other software installed on your system*. Use the following procedure to find prerequisites you can reject.

Note: To reject a Preventive Maintenance Package (a collection of updates), you must manually select each of the prerequisites in that package. If you select just the ID number listed with the package name, *none* of the updates in the package will be rejected. For more information, refer to "Preventive Maintenance Packages" on page 7-3.

- a. Get a sheet of paper and label it "Reject List."
As the first item in this list, write down the update (fix) ID of the update you want to reject.
- b. To list the prerequisites of an update, type the following:

`lslpp -pB FixID` (where *FixID* is the ID of the update you want to reject.)
and press Enter.

For example, if you want to list the prerequisites for the U401962 update, you would type `lslpp -pB U401962`.

The system will display information similar to the following:

| Name | Fix Id | State | Prerequisites |
|-------------------------|---------|---------|---|
| ----- | ----- | ----- | ----- |
| Path: /usr/lib/objrepos | | | |
| bos.obj | U401986 | APPLIED | *ifreq bosadt.lib.obj p=U402035 *prereq bos.obj v=03 r=02 m=0000 |

5. Look at the list of prerequisites listed in the `Prerequisites` column.

Are there any "p=" numbers in the `Prerequisites` column?

NO: Go to step 6.

YES: Write down the numbers in your reject list. Using the example in step 4, you would write down U402035.

Note: Some of the prerequisites in your list may also be needed to fix other problems not related to the update you are rejecting. You may not want to reject such a prerequisite. If you want to find out more about a particular prerequisite, type:

```
lslpp -AB PrereqID (where PrereqID is the update, or fix, ID number of the prerequisite.)
```

and press Enter.

If you decide you do *not* want to reject one of the prerequisites, cross it off your reject list.

Continue with step 6.

6. Type the following:

```
smit install_reject (or type smit -C install_reject if you are working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| Reject Applied Updates (Use Previous Version) | | | |
|---|----------------|-------------|------------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| * SOFTWARE name | [Entry Fields] | | |
| REJECT versions that depend on above version? | [] | | + |
| EXTEND file systems if space is needed? | no | | + |
| | yes | | + |
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

7. SOFTWARE name is highlighted. Press F4 to list the applied updates.

A screen similar to the following displays:

Reject Applied Updates (Use Previous Version)

SOFTWARE name

Move cursor to desired item and press F7.
ONE OR MORE items can be selected.
Press Enter AFTER making all selections.

[TOP]

| # Name | Level |
|---------|-------------------------|
| # | |
| bos.obj | 03.02.0000.0000.U401962 |
| bos.obj | 03.02.0000.0000.U401963 |
| bos.obj | 03.02.0000.0000.U401968 |

[MORE...9]

F1 = Help
F2 = Refresh
F3 = Cancel

F5 = Select
F8 = Image
F10 = Exit

F9 = Enter=Do

8. Refer to your reject list. You will be selecting the numbers that remain in your reject list.

Move the cursor to highlight the update (identified by the ID numbers) you want to reject. When the update you want to reject is highlighted, press F7 to select it. The > (greater than) symbol appears next to each item you select to indicate that it will be rejected. To deselect a previously selected item, move the cursor to highlight the item and press F7.

When you are sure that your selections are correct, press Enter. The Reject Applied Updates screen reappears.

9. After you have selected all the updates you want to reject, press Enter.

A screen and popup similar to the following displays:

Reject Applied Updates (Use Previous Version)

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* SOFTWARE
REJECT
EXTEN

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last change to stop before continuing.

Press Enter to continue.
Press Cancel to return to the application

F1 = Help
F2 = Refresh
F3 = Cancel

F5 = Undo
F8 = Image
F10 = Exit

F9 = Shell

[Entry Fields]

+

+

+

= List
= Image

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10. Press Enter again. A Command Status screen similar to the following displays:

| COMMAND STATUS | | | |
|---|-------------|------------|------------|
| Command: RUNNING | stdout: yes | stderr: no | |
| Before command completion, additional instructions may appear below | | | |
| [TOP] | | | |
| installp: Performing requisite checking. (This may take several minutes.) | | | |
| installp: The following software products will be rejected: bos.obj at level 3.2.0.0.U401968 | | | |
| installp: Rejecting software for product: bos 3.2.0.0.U401968 | | | |
| [MORE...107] | | | |
| F1= Help | F2= Refresh | F3= Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

11. When the Command: status indicator changes to OK, press Enter to exit SMIT.

You are finished with the reject procedure.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command and **smit** command.

Appendix A. Optional Software Installation and Update Concepts in this manual defines the terms and concepts used in this chapter.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

POST-INSTALL
PROCEDURES

Chapter 8. Post-Installation Procedures

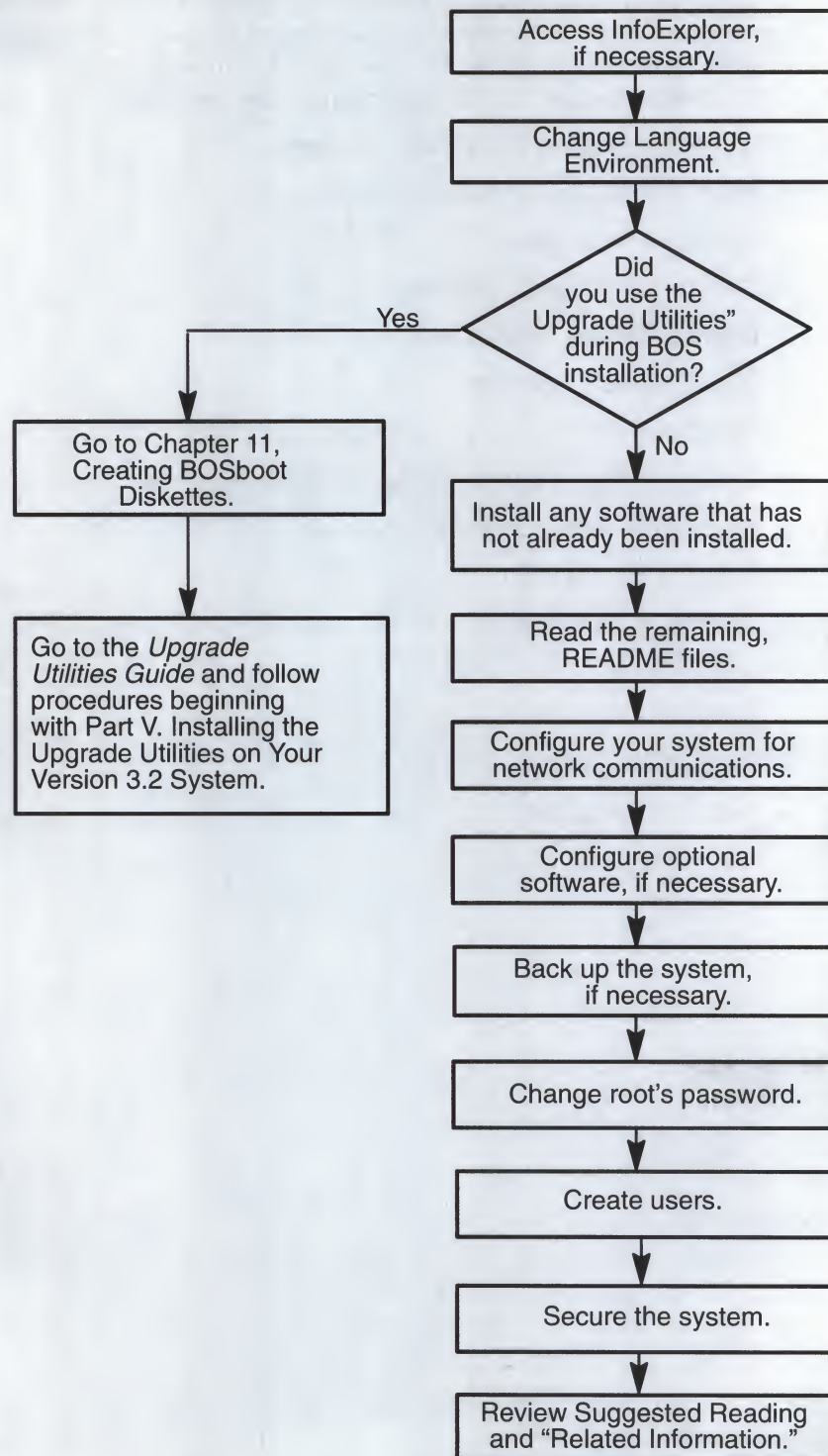
This chapter describes how to backup your system as well as directing you to the appropriate chapters for restoring your system after using the upgrade utilities during BOS installation, accessing README files and InfoExplorer, configuring your system for network communications, and configuring optional software products you may have installed.

This chapter contains the following sections:

| | |
|--|-----|
| • Flow Chart for Post-Installation Procedures | 8-2 |
| • Accessing InfoExplorer | 8-3 |
| • Change Language Environment | 8-3 |
| • Upgrade Utilities Procedure | 8-3 |
| • Install Non-IBM Software | 8-3 |
| • README Files | 8-4 |
| • Configure Your System for Network Communications | 8-4 |
| • Configure Optional Software | 8-4 |
| • Back Up Your System | 8-4 |
| • Change root's Password | 8-4 |
| • Create Users | 8-5 |
| • Secure the System | 8-6 |
| • Suggested Reading | 8-6 |
| • Related Information | 8-7 |

Flow Chart for Post-Installation Procedures

This flow chart shows the basic steps that will be covered in this chapter.



Accessing InfoExplorer

InfoExplorer is your on-line hypertext information library. It contains thousands of pages of documentation that you can read and search from your system display. There are two ways that InfoExplorer can be made available. It can be installed on one of your hard disks, or you can read it from your CD-ROM disk drive. If you want to access InfoExplorer from your CD-ROM drive and it is not already mounted, go to "Chapter 13. Mounting the InfoExplorer CD-ROM." Then, return here and continue with the next section.

Change Language Environment

Version 3.2 has been significantly enhanced in the area of National Language Support (NLS). The single, worldwide system provides support for both single-byte and multibyte code sets. In addition to the language environments supported in Version 3.1.x, Greek and Turkish language environments (locales) are supported. Support is provided for the PC-based code sets of Version 3.1.x (IBM-850 and IBM-932), as well as the industry-standard code sets (ISO8859 and EUC [Extended Unix Code]). The PC-based code sets of Version 3.1.x are the defaults for Version 3.2. If you wish to change your language environment or change the code set associated with your environment, refer to the following articles:

- "How to Change Your Locale" in *System Management Guide*.
- "Understanding Code Set Strategy" in the *Kernel Extensions and Device Support Programming Concepts*.
- "National Language Support Overview for System Management" in *System Management Guide*.
- "National Language Support Overview for Programming" in *General Programming Concepts*.

Upgrade Utilities Procedure

If you did *not* use the "Upgrade Utilities" during Base Operating System (BOS) installation, skip to section "Install Non-IBM Software."

If you used the "Upgrade Utilities" to help save your system's configuration, and you now want to use the utilities to help reconfigure your system, do the following:

1. Go to "Chapter 11. Creating BOSboot Diskettes", and then return here.
2. It is recommended that you backup your system at this point. If you wish to perform a backup of your system, go to "Chapter 15. Backing Up Your System." When you are finished creating a backup, return here and continue with step 3.
3. Return to the *Upgrade Utilities Guide* and follow the procedures there, beginning with "Part V. Installing the Upgrade Utilities on your Version 3.2 System."

Install Non-IBM Software

If you have any non-IBM software that you have not yet installed, use the manufacturer's instructions and install it now. Then, return here and continue with the next section.

README Files

When a piece of software is installed on your system a README file may also be automatically installed. Each software product may have its own README file. A README file is an online document that contains late-breaking information about changes or problems in the software. It is important that you read the README files for the optional software you installed before you begin to use your system. For instructions on how to view the README files, go to "Chapter 12. Viewing README Files." Then, return here and continue with the next section.

Configure Your System for Network Communications

If your system is part of a network, then the network communications software (TCP/IP and NFS), must be configured before you can communicate over the network. If you want to use your system on a network and you have not yet configured this software, go to "Chapter 14. Network Configuration." Then, return here and continue with the next section.

Configure Optional Software

Some optional software products must be configured (set up) before use. Instructions for configuring the individual optional software products are contained in the installation guide manual for each product. If your software is not yet configured, refer to the install guide for each product that you installed and complete the configuration procedures. Then, return here and continue with the next section.

Back Up Your System

It is always a good idea to back up your system after you have installed new or updated software products. This allows you to restore your system from the backup copy, in case of a problem, or install the backup copy to another system. If you wish to perform a backup of your system, go to "Chapter 15. Backing Up Your System." Then return here and continue with the next section.

Change root's Password

When choosing a password, choose one you can easily remember, but is difficult for someone else to guess.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
passwd
```


and press Enter.
3. Type the password you want to use for root and press Enter.
4. The system prompts you to enter the password again. Type the password exactly as you typed it in step 3 and press Enter.

Continue with the next section.

Create Users

If root is the only user on your system, you should now create a nonroot user name for your everyday use. Using the root login for everyday tasks increases the possibility that you will accidentally corrupt your system due the root user's ability to run system commands. You should create a nonroot account for use when you are performing nonadministrative tasks such as running applications. In addition, you should also create user accounts for any other people who want to use the system.

1. To add new user accounts, use the **smit mkuser** command.
 - a. Type the following:

```
smit mkuser
```


and press Enter.
The Create User screen should appear.
 - b. The **User NAME** field is highlighted. Type the name of the user you want to add and press Enter.
The Command Status screen should appear.
 - c. If you want to add another user, press F3 and repeat step b. If you are finished adding new users, press F10 to exit SMIT, and continue with step 2.
2. From the system prompt, use the **passwd** command to set the new user's password:

```
passwd username
```

 (where *username* is the name of the user created in step 1.)
and press Enter.
3. The system will then prompt you to type in a password for the user. Type the password for the user and press Enter.
4. The system prompts you to enter the password again. Type the password exactly as you typed it in step 3 and press Enter.
5. Repeat steps 2 and 4 to set the password for each new user.
6. The user name is now ready for use to login to the system. The first time the username is used the system will prompt the user to select a new password. This is done so that the root administrator will not know the user's password.

Continue with the next section.

Secure the System

At this point, you may want to turn your system unit key switch to the SECURE position and remove the key. There are two reasons why you may want to do this:

- When the system unit key switch is in the SECURE position, the reset button is not active and someone cannot accidentally press the reset button and cause a loss of data.
- When the key switch is in the SECURE position, you can prevent someone from rebooting your system and attempting to gain unauthorized access to your system. If you start the system while the key switch is in the SECURE position, the booting process stops and 200 appears in the three-digit LED display. The system does not perform any further operations until the key switch is set to the NORMAL or SERVICE position.

If you want to prevent accidental resets and make your system more secure, turn your key to the SECURE position and remove it.

Continue with the next section.

Suggested Reading

Your system should now be ready to use.

Where do you go from here?

If you are a newcomer, the next document to read is the *System User's Guide*. If you will be doing system management (administration) tasks for your system, the next book to read is *System Management Guide*.

A good follow-up to these books is InfoExplorer. You can explore the many books it contains by using its hypertext functions. You can also look for information in the hardcopy books that came with your system.

Continue with the next section.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals for more information on the concepts and procedures covered in this chapter:

The **mkuser** command, **passwd** command, and **smit** command.

The Backup Overview in *System Management Guide* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *System Management Guide* provides information on mounting files and directories, mount points, and automatic mounts.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

NOTES

CREATING AN
INSTALL SERVER

Chapter 9. Creating an Installation Server

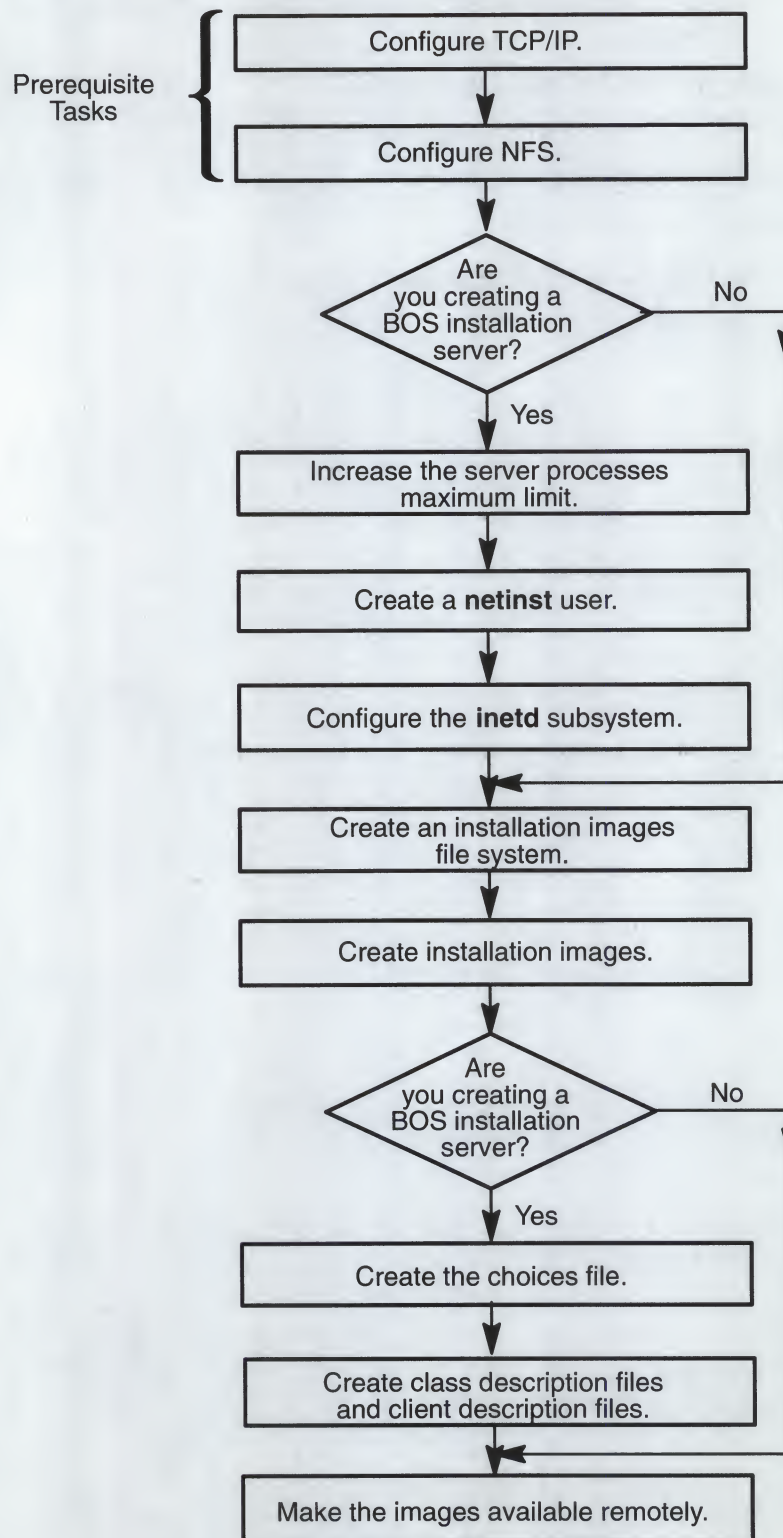
This chapter describes how to create a network installation server. A *network installation server* acts as a source of software for client machines that want to install software from across the network.

This chapter contains the following sections:

- Flow Chart for Creating a Network Installation Server 9-2
- Prerequisite Tasks and Conditions 9-3
- Installation Procedure 9-5
- Advanced Path: Creating an Information Server 9-43
- Related Information 9-48

Flow Chart for Creating a Network Installation Server

The following flow chart shows the basic steps you must perform to create a network installation server from an installed system.



Prerequisite Tasks and Conditions

1. An Ethernet or Token-Ring network adapter must be installed.

Note: If you are using a Fiber Distributed Data Interface (FDDI) network, the FDDI adapter, FDDI software (**fddi.obj**), and FDDI microcode (**fddi.mc**) must be installed.

2. You should be familiar with your basic hardware operations. If you are not, refer to "Chapter 18. Hardware Basics" or to your hardware documentation. Then, return here and continue with the next step.
3. You should be familiar with the System Management Interface Tool (SMIT). If you are not, refer to "Chapter 19. SMIT Basics." Then, return here and continue with the next step.
4. TCP/IP and NFS software must already be installed on your installation server. To see if they are, do the following:
 - a. If you are not already logged in as root on your installation server, log in as root now.
 - b. Type the following:

```
lslpp -L bosnet.*
```

and press Enter.

If the message `There is no product in ...` is displayed, you will have to install the Base Operating System Network Facilities (BOSNET) optional software product. To do this, go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products. Then, return here and continue with the next step.

5. TCP/IP and NFS software must be configured on your installation server.
 - a. To see if TCP/IP is configured, type the following:

```
lssrc -s sendmail
```

and press Enter.

If the status of `sendmail` shows inoperative, you must configure TCP/IP. Go to "Chapter 14. Network Configuration" and follow the procedures for configuring TCP/IP. Then, return here and continue with the next step b.

- b. To see if NFS is configured, type the following:

```
lssrc -s lockd
```

and press Enter.

If the status of `lockd` shows inoperative, you must configure NFS.

Go to "Chapter 14. Network Configuration" and follow the procedures for configuring NFS. Then, return here and continue with the next step.

6. The Base Application Toolkit must be installed on your installation server.

- a. To see if the Base Application Toolkit is already installed on your installation server, type the following:

```
lsipp -L bosadt.bosadt.obj
```

and press Enter.

- b. If the message `There is no product in ...` is displayed, you will have to install the Base Application Toolkit. To do this, go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products. Then, return here and continue with the next section, "Installation Procedure."

Installation Procedure

The following subsections contain instructions for creating a system as a network installation server. These subsections are as follows:

- A. Determine Your Starting Point
- B. Increase the Server's Maximum Processes Limit
- C. Create a New User Named netinst
- D. Configure the inetd Subsystem
- E. Create a File System for the Installation Images
- F. Create the Installation Images
- G. Create the choices File
- H. Create Class Description Files and Client Description Files
- I. Make the Installation Images Available for Remote Use

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin with the next section, "A. Determine Your Starting Point." This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of the Base Operating System and only need a minimal set of instructions, you can skip to page 9-43 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin with the next section.

A. Determine Your Starting Point

You have two choices:

- If you are creating a server to install *just* optional software products (clients will not be installing BOS from this server), go to the section "E. Create a File System for the Installation Images" on page 9-16.
- If you are creating a server to install *both* BOS and optional software products, go to the next section, "B. Increase the Server's Maximum Processes Limit."

B. Increase the Server's Maximum Processes Limit

By default, up to nine client machines can install from an installation server at the same time.

The default maximum total number of processes allowed for installation clients is 40. Each client installation creates approximately four processes. This means that you can only install approximately nine client machines at the same time.

- If you expect that you will never have more than nine client machines simultaneously using the server, then continue with the next section, "C. Create a New User Named netinst" on page 9-8.
- If you expect 10 or more client machines will need to use the installation server simultaneously, you must increase the server's maximum processes limit.

PROCEDURE:

Before you begin, calculate the number of processes you need. To do this, multiply four times the number of simultaneous clients you expect. For example, if you expect that 25 clients will need to use the server simultaneously, the formula would be:

$$4 \text{ (processes)} \times 25 \text{ (clients)} = \text{a maximum of 100 processes.}$$

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit chgsys                (or type smit -C chgsys if you are working in
                             AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| Change / Show Characteristics of Operating System | | | |
|---|----------------|----------------|----------|
| Type or select a value for the entry fields. Press Enter AFTER making all desired changes. | | | |
| | | [Entry Fields] | |
| Maximum number of PROCESSES allowed per user | [40] | | ++ |
| Maximum number of pages in block I/O BUFFER CACHE | [20] | | ++ |
| Maximum Kbytes of real memory allowed for MBUFS | [2080] | | ++ |
| Automatically REBOOT system after a crash | false | | + |
| Continuously maintain DISK I/O history | true | | + |
| HIGH water mark for pending write I/Os per file | [0] | | ++ |
| LOW water mark for pending write I/Os per file | [0] | | ++ |
| Enable memory SCRUBBING | false | | ++ |
| Amount of usable physical memory in Kbytes | 40960K | | + |
| Primary dump device | /dev/hd7 | | |
| Secondary dump device | /dev/sydumpnul | | |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Maximum number of PROCESSES allowed per user is highlighted.
Type the number of processes you calculated you need and press Enter.
For example, type 100 to allow 25 concurrent client installations and press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | |
|---|-------------|------------|------------|
| Command: OK | stdout: yes | stderr: no | |
| Before completion, additional instructions may appear below | | | |
| sys0 changed | | | |
| F1= Help | F2= Refresh | F3= Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

The new maximum process limit is effective immediately. It remains effective with all subsequent boots of the system, until you change it again using this procedure.

4. When the Command: status indicator changes to OK, press F10 to exit SMIT.

You have finished increasing the server processes maximum limit. Continue with the next section, "C. Create a New User Named netinst."

C. Create a New User Named netinst

This procedure describes how to create the **netinst** user. When clients contact the server to begin installation, this is the user account that will be automatically activated to begin the install process.

1. If you are not already logged in as root, log in as root now.

2. Type the following:

```
smit mkuser
```

(or type `smit -C mkuser` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| Create User | | | |
|---|----------------|-----------|----------|
| Type or select a value for the entry fields. Press Enter AFTER making all desired changes. | | | |
| [TOP] | [Entry Fields] | | |
| * User NAME | [] | / | |
| ADMINISTRATIVE User | false | + | |
| User ID Anonymous UID | [] | | |
| LOGIN User | true | | |
| PRIMARY Group | [] | | |
| Group set | [] | | |
| SU Groups | [ALL] | + | |
| HOME Directory | [] | + | |
| [MORE...12] | | | |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

Note: Do *not* press Enter until you reach step 7.

3. User NAME is highlighted.

Type the following:

```
netinst
```

4. Move the cursor to LOGIN User?

Press the Tab key to change the default to false.

5. Move the cursor to Another user CAN SU to user?

Press the Tab key to change the default to false.

6. Move the cursor to User CAN RLOGIN?

Press the Tab key to change the default to false.

7. To create the new user, press Enter.

8. The Command Status screen appears.

An account is created on the installation server for the user **netinst** with a private **/home** directory and membership in the **staff** group.

9. When the Command: status indicator changes to OK, press F10 to exit SMIT.

10. Type the following:

```
cd /usr/lpp/bosinst
```

and press Enter.

11. Next, create the **db**, **bin**, and **scripts** directories in netinst's directory **/home/netinst**.

Type the following:

```
find bin db scripts -print | cpio -dumpv /home/netinst
```

and press Enter.

A list of files and number of blocks is displayed as the directories and files are created.

12. Type the following:

```
cd /home/netinst
```

and press Enter.

13. Next change the permissions for all files and directories in **/home/netinst** so that they are only accessible to user **netinst**.

Type the following:

```
chmod -R 500 *
```

and press Enter.

14. Next make the user **netinst** the owner of all the files under the **/home/netinst** directory and set the group for the files to **staff**.

Type the following:

```
chown -R netinst.staff *
```

and press Enter.

You have finished creating the user **netinst**. Continue with the next section, "D. Configure the inetd Subsystem."

D. Configure the inetd Subsystem

This procedure describes how to configure the **inetd** subsystem. The **inetd** subsystem provides Internet service management for a network. The **inetd** subsystem controls several **inetd** subservers. The **instsrv** subservser will be added to the list of **inetd** subservers. The **instsrv** subservser is needed to install the Base Operating System and other software over a network.

1. Be sure that you are logged in as root.
2. First, you need to check and see if the **instsrv** service is already active.

Type the following line:

```
smit lsservices      (or type smit -C lsservices if you are working in
                     AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | |
|---|-------------|-------------|------------|
| Command: OK | | stdout: yes | stderr: no |
| Before completion, additional instructions may appear below | | | |
| [TOP] | | | |
| servname | Port/proto | Aliases | |
| <hr/> | | | |
| echo | 7/tcp | | |
| echo | 7/udp | | |
| discard | 9/tcp | sink null | |
| discard | 9/udp | sink null | |
| systat | 11/tcp | | |
| [MORE...62] | | | |
| F1= Help | F2= Refresh | F3= Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

3. Scroll through the list and check for a line similar to the following:

```
instsrv 1234/tcp # network install services
```

If the line is in the list, skip to step 5 on page 9-12.

If it is *not* in the list, continue with step 4.

4. To add the **instsrv** service, perform the following:

a. Press F10 to exit SMIT.

b. Type the following:

smit mksservices (or type smit -C mksservices if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| Add a Service | | | |
|---|------------|----------------|----------|
| Type or select a value for the entry fields. Press Enter AFTER making all desired changes. | | | |
| * Official Internet SERVICE Name | [] | [Entry Fields] | |
| * Transport PROTOCOL | tcp | | + |
| * Socket PORT number | [] | | # |
| Unofficial Internet SERVICE NAMES (separate names with blanks) | [] | | |
| | | | |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

Note: Do *not* press Enter until you get to step 4d.

c. Official Internet SERVICE Name is highlighted.

Type the following:

instsrv

d. Move the cursor to Socket PORT number.

Type the following:

1234

and press Enter.

A Command Status screen appears. When the Command: status indicator changes to OK, continue with step 5.

5. Press F10 to exit SMIT.
6. Next check and see if the **instsrv** subserver is already active.

Type the following:

`smit lsinetdconf` (or type `smit -C lsinetdconf` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | | | | |
|---|-------------|-------------|----------|------------|----------|----------------|
| Command: OK | | stdout: yes | | stderr: no | | |
| Before command completion, additional instructions may appear below | | | | | | |
| [TOP] | | | | | | |
| servname | | Socket | protname | Wait/ | User | Server Program |
| Name | Type | | Nowait | | | Arguments |
| <hr/> | | | | | | |
| echo | stream | tcp | nowait | root | internal | |
| echo | dgram | udp | wait | root | internal | |
| discard | stream | tcp | nowait | root | internal | |
| discard | dgram | udp | wait | root | internal | |
| daytime | stream | tcp | nowait | root | internal | |
| [MORE...15] | | | | | | |
| F1= Help | F2= Refresh | F3= Cancel | | F6=Command | | |
| F8=Image | F9=Shell | F10=Exit | | | | |

7. Scroll through the list and check for a line similar to the following:

`instsrv stream tcp nowait netinst /u/netinst/bin/instsrv`

If the line is in the list, skip to step 9 on page 9-15.

If it is *not* in the list, continue with step 8.

8. To add the **instsrv** subserver, perform the following:

a. Press F10 to exit SMIT.

b. Type the following:

smit mkinetdconf (or type smit -C mkinetdconf if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

Add an inetd Subserver

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

* Available Subservers

[Entry Fields]

[] +

F1=Help

F2=Refresh

F3=Cancel

F4=List

F5=Undo

F6=Command

F7=Edit

F8=Image

F9=Shell

F10=Exit

Enter=Do

c. Available Subservers is highlighted.

To see a selection list of available subservers, press F4.

A screen similar to the following displays:

Add an inetd Subserver

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

* Available Subservers

[Entry Fields]

[] +

Available Subservers

Move cursor to desired item and press Enter.

bootps

comsat

finger

instsrv

talk

tftp

udp

udp

tcp

udp

udp

F1

F5

F9

F1 = Help

F8=Image

F2 = Refresh

F10=Exit

F3 = Cancel

Enter=Do

- d. Move the cursor to `instsrv tcp`. Press Enter.
A screen similar to the following displays:

Add an inetd Subserver

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

* Internet SERVICE Name

* Transport PROTOCOL

* SOCKET Type

* WAIT for Server to Release Socket

* USER Name

* Service Program PATH Name

* Service Program Command Line ARGUMENTS

[Entry Fields]

[instsrv]

tcp

stream

nowait

[netinst]

[/u/netinst/bin/instsrv]

[instsrv -r /tmp/neti>

F1=Help

F2=Refresh

F3=Cancel

F4=List

F5=Undo

F6=Command

F7=Edit

F8=Image

F9=Shell

F10=Exit

Enter=Do

- e. Press Enter. A screen similar to the following displays:

COMMAND STATUS

Command: OK stdout: yes stderr: no

Before command completion, additional instructions may appear below

0513-095 The request for subsystem refresh was completed successfully.

F1= Help

F2= Refresh

F3= Cancel

F6=Command

F8=Image

F9=Shell

F10=Exit

9. Press F10 to exit SMIT.

10. To show the hostname of your installation server, type the following:

```
hostname
```

and press Enter.

11. To verify that the inetd subsystem configuration is correct, type the following:

```
/usr/lpp/bosinst/ninst Hostname curdate
```

 (where *Hostname* is the name
of the host displayed in step
10.)

and press Enter.

If the system displays error messages, use the system messages to determine the problem and return to step 2 of "D. Configuring the inetd Subsystem" on page 9-10 and repeat the procedure.

If a 13-digit number is displayed, you have correctly configured the **inetd** subsystem. Continue with the next section, "E. Create a File System for the Installation Images File System."

E. Create a File System for the Installation Images

This procedure describes how to create a file system to store the software that will be available for installation from the server. Software that is stored in an installation format is called an installation image. It is these installation images that will be stored in the file system.

Be sure to allow enough room for all of the software products that you want to install. However, be careful not to waste space on your hard disk. Once a file system is created, it cannot be reduced. It can only be extended or deleted.

The basic software needed to support a system on a network is the Base Operating System (BOS), the Network Support Facilities, and the system messages. Approximately 131,072 512-byte blocks or 64 megabytes of disk space is required for these software products.

1. Are you creating a server to install a backup image?

YES: I am creating a server to install a backup image. Go to step 1 in "Creating the File System."

Note: The backup image must be of BOS Version 3.2. Also, it must be created using the SMIT Backup the System menu or the **mkszfile** and **mksysb** commands from the command line.

NO: I am not creating a server to install a backup image. Go to the next question.

2. Are you creating a server to install both BOS and Optional Software Product images?

YES: I am creating a server to install both BOS and Optional Software Product images. The number of 512-byte blocks of file system will be 131,072. Write down 131,072 and label it Size of File System. Skip to step 2 in Creating the File System on page 9-19.

NO: I am creating a server to install only Optional Software Product images. The number of 512-byte blocks of file system will be 8,192. Write down 8,192 and label it Size of File System. Skip to step 2 in Creating the File System on page 9-19.

Creating the File System

1. To determine the amount of space required for a file system containing an installation image of an installed system, perform the following:
 - a. First, you need to get a list of the file systems that are going to be backed up to create the installation image. To do this, type the following:

```
lsvg -l rootvg | grep jfs | grep open
```

 (where the character "l" is a lowercase "L.")

and press Enter.

A table similar to the following appears on your screen:

| | | | | | | |
|--------|--------|----|----|---|------------|-------|
| hd8 | jfslog | 1 | 1 | 1 | open/syncd | N/A |
| hd8 | jfslog | 1 | 1 | 1 | open/syncd | N/A |
| hd4 | jfs | 1 | 1 | 1 | open/syncd | / |
| hd2 | jfs | 20 | 20 | 1 | open/syncd | /usr |
| hd9var | jfs | 1 | 1 | 1 | open/syncd | /var |
| hd3 | jfs | 2 | 2 | 1 | open/syncd | /tmp |
| hd1 | jfs | 1 | 1 | 1 | open/syncd | /home |

- b. Write down the names in the far right column, except for the phrase N/A.

- c. Next you need to find the size of each of these file systems.
Type the following:

```
df -I
```

and press Enter.

A table similar to the following appears on your screen:

| Filesystem | Total KB | used | free | %used | Mounted on |
|-------------|----------|--------|------|-------|------------|
| /dev/hd4 | 4096 | 2132 | 1964 | 52% | / |
| /dev/hd2 | 118784 | 109372 | 9412 | 92% | /usr |
| /dev/hd9var | 4096 | 532 | 3562 | 12% | /var |
| /dev/hd3 | 8192 | 300 | 7892 | 3% | /tmp |
| /dev/hd1 | 4096 | 268 | 3828 | 6% | /home |
| /dev/lv00 | 102400 | 93797 | 8604 | 91% | /usr/src |

- d. Search the far right column of this screen for the names that you wrote down in step b. The used column shows the amount of space required to store each file system. Add up the used numbers for all the file systems in the list from step b. For example, using the example values above, the calculations would look like this:

$$2132 + 109372 + 532 + 300 + 268 = 112604$$

- e. Multiply your own total from step d by 2. Write this number down and label it. Using the example total from the step above, the calculation would look like this:

$$112604 \times 2 = 225208$$

Write down the total you calculate using your own screen's values and label it Size of File System.

- f. Continue with step 2.

2. Type the following:

`smit crjfs` (or type `smit -C crjfs` if you are working in AIXwindows.)
and press Enter.

A screen similar to the following displays:

Volume Group Name

Move cursor to desired item and press Enter.

rootvg

F1 = Help

F2 = Refresh

F3 = Cancel

F8=Image

F10=Exit

Enter=Do

3. Select the volume group where you want to store the new installation images file system.

A screen similar to the following displays:

Add a Journaled File System

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

| | [Entry Fields] | |
|--|----------------|---|
| Volume group name | rootvg | |
| * SIZE of file system (in 512-byte blocks) | [] | # |
| * MOUNT POINT | [] | |
| Mount AUTOMATICALLY at system restart? | no | + |
| PERMISSIONS | read-write | + |
| Mount Options | [] | + |

F1 = Help

F2 = Refresh

F3 = Cancel

F4 = List

F5 = Undo

F6 = Command

F7=Edit

F8 = Image

F9 =Shell

F10=Exit

Enter=Do

Note: Do *not* press Enter until you get to step 7 on page 9-20.

4. SIZE of file system is highlighted.
Type the size of the file system you wrote down.
5. Move the cursor to MOUNT POINT.
Type the following:

```
/inst.images
```
6. Move the cursor to Mount AUTOMATICALLY at system restart?
Press the Tab key to change the default to yes.
7. To create the installation images file system, press Enter.
A screen similar to the following displays:

If the file system creation is successful, continue with step 8.

If the file system creation is *not* successful, do the following:

a. Use the system messages to determine the problem.

b. Press F10 to exit SMIT.

8. Press F10 to exit SMIT.

9. To mount the installation images file system, type the following:

```
mount /inst.images
```

and press Enter.

10. This step describes how to create a directory structure for the installation images. It is necessary at this point to create a directory structure to organize the installation images that will be loaded into the file system.

- a. To create the directory structure, type the following:

(where *hardware_architecture* is the name of the architecture of the client machine where you will be installing the software from the network, and *software_version* is the version number of the software.)

```
mkdir -p /inst.images/hardware_architecture/software_version
```

and press Enter.

For example, if you are creating Version 3.2 software installable images for a RISC System/6000 system, you would type:

```
mkdir -p /inst.images/risc_sys6000/3.2
```

and press Enter.

- b. On a sheet of paper, write the full name of the directory that you are using from step 10a.

You have finished creating a file system to hold the installation images. Continue with the next section, "F. Create Installation Images."

F. Create Installation Images

An installation image is a set of files in tar or backup format. The installation image for the Version 3.2 Base Operating System (**bos.obj**) is in tar format. The installation images for all other software products are in backup format.

The installation images are made available to the client for network installation by placing them in the directory structure you created in the previous section, "E. Create a File System for the Installation Images."

1. Are you creating a backup image?

YES: I am creating a backup image. Go to "Creating a System Installation Image Using SMIT mksysb."

NO: I am not creating a backup image. Go to the next question.

2. Are you creating both BOS and optional software product images?

YES: I am creating both BOS and optional software product images. Go to question 3.

NO: I am only creating optional software product images. Go to question 4.

3. Are you using tapes to create the BOS and optional software product images?

YES: I am using tapes. Go to "Creating BOS Installation Image from a Factory Tape" on page 9-25.

NO: I am using either a CD-ROM or diskettes.

CD-ROM: Go to "Creating BOS Installation Image from CD-ROM" on page 9-27.

Diskettes: Go to "Creating BOS Installation Image from Diskette" on page 9-28.

4. Are you using tapes or a CD-ROM to create the optional software product images?

YES: I am using tapes or a CD-ROM. Go to "Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM" on page 9-29.

NO: I am using diskettes. Go to "Creating Optional Software and Service Update Images from Diskette" on page 9-33.

Creating a System Installation Image Using SMIT mksysb

You can use the SMIT Backup the System function to create a single installation image of an entire system. This image is made available for installation by storing it in the installation image directory on your installation server. In the following procedure, as an example, the installation server is backed up directly into the installation images directory.

Warning: If you install a SMIT **mksysb** backup image, then certain configuration information from the original source machine will be copied onto the target system. This includes data such as passwords and network addresses. Please note, this is a major change from BOS Version 3.1.

1. Be sure you have logged in as `root` on your server machine.
2. Type the following:

```
smit mksysb (or type smit -C mksysb if you are working in AIXwindows.)  
and press Enter.
```

A screen similar to the following displays:

| Backup the System | | | |
|--|--------------|----------------|------------|
| Type or select a value for the entry fields. Press Enter AFTER making all desired changes. | | | |
| | | [Entry Fields] | |
| WARNING: Execution of the backup command will result in the loss of all material previously stored on the selected output medium. This command backs up only rootvg volume group | | | |
| FORCE increase of workspace if needed | | no | + |
| *Backup DEVICE or FILE | | [] | |
| (example: /dev/rfd0) | | | |
| [MORE...3] | | | |
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

3. **FORCE increase of work space if needed** is highlighted.
Press the Tab key to change the default value to `yes`.

4. Move the cursor to **Backup DEVICE** or **FILE**. This field specifies the destination for the backup image that will be created.

Type the name of the directory that will hold the installation image followed by a slash (/) and the name you want to use for the installation image that is about to be created.

Note: The installation image must be named **bos.obj** or have the **bos.obj*** prefix. Since the installation image will be a **mksysb** (backup) image, it is suggested that you name the installation image **bos.obj.mksysb** or **bos.obj.mksysb.date** where *date* is the date that the image was created. For example, an image created on December 7 could be named **bos.obj.mksysb.1207**.

For example, if you used the suggested directory, you would now type:

```
/inst.images/risc_sys6000/3.2/bos.obj.mksysb.1207
```

5. To begin the backup, press Enter.
This will take several minutes.

As the system backs up to the installation image file system, the Command Status screen displays system messages.

If the backup is successful, then continue with step 6.

If the backup is *not* successful, do the following:

- a. Use the system messages to determine the problem.
- b. Press F10 to exit SMIT.
- c. Perform this procedure again, with corrections, beginning with step 2 on page 9-23.

6. Press F10 to exit SMIT.

You have finished creating and storing the backup installation image. Skip to "Protecting the Optional Software and Service Update Images" on page 9-37.

Creating BOS Installation Image from a Factory Tape

This procedure describes how to create a BOS installation image from a factory tape.

1. Be sure you have logged in as root on your server machine.
2. To list the number identifying the tape device, type the following:

```
lsdev -Cc tape
```

and press Enter.

The first item on the line is the device name. The name for a tape device is rmt and the number after the rmt is the number of the tape device. For example, in the name rmt0, zero (0) is the number of the tape device.

3. Insert the factory tape labelled Version 3.2 into your tape drive.

4. First, change to the installation images directory.
Type the following:

```
cd /inst.images/hardware_architecture/software_version
```

(where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images.)

For example, if you were using the example name, you would now type:

```
cd /inst.images/risc_sys6000/3.2
```

and press Enter.

5. If you are *not* using an 8mm tape drive, skip to step 8 on page 9-26.

If you are using an 8mm tape drive, continue with step 6.

6. To check the block size, type the following:
(where `x` is the numeral identifying the tape device and `l` is a lowercase "L.")

```
lsattr -E -l rmtx
```

and press Enter.

If the `block_size` is 512, skip to step 8 on page 9-26.

If the `block_size` is *not* 512, write down the block size and continue with step 7.

7. To change the block size to 512, type the following:
(where `x` is the numeral identifying the tape device and `l` is a lowercase "L.")

```
chdev -a block_size=512 -l rmtx
```

and press Enter.

8. Use the **dd** command to transfer (extract) the images from the tape into the installation images directory.

Note: The BOS installation image must be named **bos.obj** or have the **bos.obj*** prefix. For example, if the date was December 7 and you wanted to name the image based on the date it was created, you would name it `bos.obj.dec07`.

Type the following:

(where *x* is the numeral identifying the tape device and *bos.obj.name* is what you want to name the BOS installation image.)

```
dd if=/dev/rmtx of=bos.obj.name ibs=90b obs=1b conv=sync fskip=3
```

and press Enter. (This process takes a while. Please be patient.)

For example, if you were using the example name and tape drive 1, you would type:

```
dd if=/dev/rmt1 of=bos.obj.dec07 ibs=90b obs=1b conv=sync fskip=3
```

and press Enter.

9. If you are using an 8mm tape drive *and* you changed the block size to 512 in step 7, change it to its original value by typing:

```
chdev -a block_size=original_size -l rmtx
```

(where *x* is the numeral identifying the tape device, *original_size* is the original block size, and *l* is a lowercase "L.")

and press Enter.

10. Remove the tape.

Go to "Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM" on page 9-29.

Creating BOS Installation Image from CD-ROM

This procedure describes how to create a BOS installation image from CD-ROM.

1. Be sure you have logged in as root on your server machine.
2. If you are accessing InfoExplorer from your CD-ROM (as described in "Chapter 13.. Mounting the InfoExplorer CD-ROM") and you want to create a BOS installation image from the same CD-ROM drive, you must first perform the following procedure before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language      (where Language is the name of the  
                                     language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
3. Place the CD-ROM containing the BOS installation image into a disc caddy, and insert the caddy into CD-ROM drive.
 4. To list the number of your tape device, type the following:

```
lsdev -Cc cdrom
```

and press Enter.

The first item on the line is the device name. The name for a CD-ROM device is cd and the number after the cd is the number of the CD-ROM device. For example, in the name cd0, zero (0) is the number of the CD-ROM device.

5. To mount the CD-ROM device, type the following:

```
mount -o ro -v cdrfs /dev/cdx /mnt      (where x is the number of the  
                                         CD-ROM device.)
```

and press Enter.

6. To copy the BOS installation image from the CD-ROM to your hard disk, type:

```
cp /mnt/bos.obj /inst.images/hardware_architecture/software_version
```

(where /inst.images/hardware_architecture/software_version is the name of the directory that holds the installation images.)

For example, if you are creating Version 3.2 software installable images for the RISC System/6000, you would type the following:

```
cp /mnt/bos.obj /inst.images/risc_sys6000/3.2
```

and press Enter.

7. To unmount the CD-ROM device, type the following:

```
umount /mnt
```

and press Enter.

8. Remove the disc caddy from the CD-ROM drive.

Go to "Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM" on page 9-29.

Creating BOS Installation Image from Diskette

This procedure describes how to create a BOS installation image from factory diskettes.

1. Be sure you have logged in as root on your server machine.

2. Type the following:

```
cd /inst.images/hardware_architecture/software_version
```

(where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images.)

For example, if you were using the example names, you would type:

```
cd /inst.images/risc_sys6000/3.2
```

and press Enter.

3. Insert the first BOS diskette.

4. Type the following:

```
dd if=/dev/rfdx bs=90b | cat >> bos_name
```

(where *x* is the numeral associated with the name of the diskette drive [rfd*x*] and *bos_name* is the name of the BOS installation image.)

Note: The BOS installation image must be named **bos.obj** or have the **bos.obj*** prefix. For example, if today's date was December 7 and you wanted to name the image based on the date it is created, you would name it `bos.obj.dec07`.

For example, if you were using diskette drive 0 and the example name, you would type:

```
dd if=/dev/rfd0 bs=90b | cat >> bos.obj.dec07
```

and press Enter.

When the **dd** command finishes running, remove the diskette and insert the next BOS diskette.

Repeat step 4 for each of your BOS diskettes.

Note: If you are using the Korn Shell (ksh), you can type `r` and press Enter instead of reentering the entire command. The `r` means to redo the last command.

5. Remove the last diskette.

Go to "Creating Optional Software and Service Update Images from Diskettes" on page 9-33.

Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM

This procedure describes how to create individual installation and update images for the optional software products from a factory tape or CD-ROM.

1. Be sure you have logged in as root on your server machine.
2. Are you creating software images from tape?

YES: I am creating software images from tape. Go to step 3.

NO: I am creating software images from CD-ROM. Read the following information and, if necessary, perform the following procedure:

If you are accessing InfoExplorer from your CD-ROM (as described in “Chapter 13. Mounting the InfoExplorer CD-ROM”) and you want to create optional software images from the same CD-ROM drive, you must first perform the following procedure before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language    (where Language is the name of the  
language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the CD-ROM that contains the optional software into a disc caddy, and insert the caddy into the CD-ROM drive.

SMIT will create and mount a temporary mount point for the CD-ROM drive.

3. Insert the factory tape or a disc caddy containing the CD-ROM into your drive.
4. Type the following:

```
smit instupdt_for_net (or type smit -C instupdt_for_net if you are
working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| Copy Software to Hard Disk for Future Installation | | | |
|---|------------|----------------|----------|
| Type or select a value for the entry fields. Press Enter AFTER making all desired changes. | | | |
| * INPUT device / directory for software | [] | [Entry Fields] | + |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

5. To list the input devices, press F4.

A screen similar to the following displays:

Copy Software to Hard Disk for Future Installation

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software

[Entry Fields]

[] +

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)

/dev/cd1 (CD-ROM Drive)

/dev/rmt0.1 (150 MB 1/4-inch Tape Drive)

/dev/fd0 (Diskette Drive)

F1 F5 F9

F1 = Help
F8=Image

F2 = Refresh
F10=Exit

F3=Cancel
Enter=Do

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive, and then it uses the temporary mount point as the input device.

Note: When creating installation image files from the CD-ROM device using **bffcreate** on the command line, the CD-ROM device must be mounted on a CD-ROM file system before the command can be issued. The input device / directory (**-d** flag) for the **bffcreate** command must be the directory on which the CD-ROM is mounted.

- The following example screens use tape drive 0 (`/dev/rmt0.1`).

Copy Software to Hard Disk for Future Installation

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

| | [Entry Fields] | |
|--|------------------------|---|
| * INPUT device / directory for software | /dev/rmt0.1 | + |
| * SOFTWARE name | [all] | |
| DIRECTORY for storing software | [/usr/sys/inst.images] | |
| DIRECTORY for temporary storage during copying | [/tmp] | |
| EXTEND file systems if space needed? | yes | + |

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

- A screen similar to the following displays:

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8. Read the following information before you continue with step 9.

If you are creating a server to install *both* BOS and optional software products, you must select at least the software products **bos**, **bosnet**, **bsl**, and **bsmLanguage** (where *Language* is the name of your language). Then select any additional products you want to make available on the installation server.

Note: If you are using a Fiber Distributed Data Interface (FDDI) network, you must also select the FDDI software option (**fddi.obj**) and the FDDI microcode option (**fddi.mc**).

If you are creating a server to install *just* optional software products, select the products you want to make available on the installation server.

9. To select the desired software products, move the cursor to the desired software and press F7.

Explanations of the abbreviations for software product names can be found in "Chapter 17. Product Information."

10. After you have finished selecting *all* of the desired software products, press Enter.

11. Move the cursor to **DIRECTORY** for storing software. Type the name of the directory that you wrote down in step 10b on page 9-21

12. Press Enter.

Note: If a message similar to Mount volume 2 on /dev/rmt0. Press the Enter key to continue appears, remove the current tape from the drive, insert the specified tape, and press Enter.

After several minutes, a screen similar to the following displays:

| COMMAND STATUS | | | |
|---|-------------|------------|------------|
| Command: OK | stdout: yes | stderr: no | |
| Before command completion, additional instructions may appear below | | | |
| /inst.images/risc_sys6000/3.2/bos.shr.3.2.0.0 | | | |
| /inst.images/risc_sys6000/3.2/bosnet.usr.3.2.0.0 | | | |
| /inst.images/risc_sys6000/3.2/bsl.usr.3.2.0.0 | | | |
| /inst.images/risc_sys6000/3.2/bsmEn_US.usr.3.2.0.0 | | | |
| | | | |
| F1= Help | F2= Refresh | F3= Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

If the command runs successfully, continue with step 13. If the **Command: status** indicator changes to **failed**, do the following

- Use the system messages to determine the problem.
- Press F10 to exit SMIT and then return to step 4 on page 9-29 and repeat the procedure with any necessary corrections.

13. Press F10 to exit SMIT.

14. Remove the tape or disc caddy containing the CD-ROM from the drive.

Go to "Protecting the Optional Software and Service Update Images" on page 9-37.

Creating Optional Software and Service Update Images from Diskette

This procedure describes how to create individual installation and update images for the optional software products on factory diskettes.

1. Be sure you have logged in as root on your server machine.
2. Type the following:

```
smit instupdt_for_net (or type smit -C instupdt_for_net if you are
                      working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| | | | |
|---|------------|----------------|----------|
| Copy Software to Hard Disk for Future Installation | | | |
| Type or select a value for the entry fields. Press Enter AFTER making all desired changes. | | | |
| * INPUT device / directory for software | [] | [Entry Fields] | + |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. To list the input devices, press F4.

A screen similar to the following displays:

Copy Software to Hard Disk for Future Installation

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software

[Entry Fields]
[]

+

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/rmt0.1 (150 MB 1/4-Inch Tape Drive)

/dev/fd0 (Diskette Drive)

F1

F5

F9

F1 = Help

F8=Image

F2 = Refresh

F10=Exit

F3=Cancel

Enter=Do

4. Move the cursor to select the appropriate diskette device and press Enter.

A screen similar to the following displays:

Copy Software to Hard Disk for Future Installation

Type or select a value for the entry fields.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software

[Entry Fields]
/dev/fd0

+

* SOFTWARE name

[all]

DIRECTORY for storing software

/usr/sys/inst.images

DIRECTORY for temporary storage during copying

/tmp

EXTEND file systems if space needed?

yes

+

F1=Help

F5=Undo

F9=Shell

F2=Refresh

F6=Command

F10=Exit

F3=Cancel

F7=Edit

Enter=Do

F4=List

F8=Image

5. Insert the first diskette of a software product into the diskette drive.
6. Move the cursor to highlight the SOFTWARE name field. To retrieve a list of the software on the diskette, press F4.

A screen similar to the following displays:

| Copy Software to Hard Disk for Future Installation | | | |
|--|---|--------------|-----------|
| Ty Pr | SOFTWARE name | | |
| * | Move cursor to desired item and press F7. | | |
| * | ONE OR MORE items can be selected. | | |
| | Press Enter AFTER making all selections. | | |
| | INed | | |
| F1 | F1 = Help | F2 = Refresh | F3=Cancel |
| F5 | F7=Select | F8=Image | F10=Exit |
| F9 | Enter=Do | | |

7. To select software, move the cursor to the desired software and press F7. After selecting *all* of the desired software products, press Enter.

Explanations of the abbreviations for software product names can be found in "Chapter 17.Product Information."

8. Move the cursor to DIRECTORY for storing software.
Type the name of the directory that you wrote down in step 10b on page 9-21

9. Press Enter.

Note: If a message similar to `Mount volume 2 on /dev/fd0`. Press the Enter key to continue appears, remove the current diskette from the drive, insert the specified diskette, and press Enter.

After several minutes, a screen similar to the following displays:

| COMMAND STATUS | | | |
|--|-------------|------------|------------|
| Command: OK | stdout: yes | stderr: no | |
| Before command completion, additional instructions may appear below. | | | |
| The number of restored files is 1. /inst.images/risc_sys6000/3.2/INed.usr.3.2.0.0 | | | |
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

If the command runs successfully, continue with step 10.

If the `Command:` status indicator changes to `failed`, do the following:

- Use the system messages to determine the problem.
- Remove the diskette from the diskette drive, press F10 to exit SMIT and then return to step 2 on page 9-33 and repeat the procedure with any necessary corrections.

10. Remove the diskette from the diskette drive.

11. Read the following information before you continue with step 12.

If you are creating a server to install *both* BOS and optional software products, you must copy at least the software products **bos**, **bosnet**, **bsl**, and **bsmLanguage** (where *Language* is the name of your language). Then copy any additional products you want to make available on the installation server.

Note: If you are using a Fiber Distributed Data Interface (FDDI) network, you must also select the FDDI software option (**fddi.obj**) and the FDDI microcode option (**fddi.mc**).

If you are creating a server to install *just* optional software products, copy the products you want to make available on the installation server.

12. Do you need to copy another software product onto the installation server?

YES: I need to copy another software product. Press F3 and return to step 5 on page 9-35.

NO: I am finished copying software. Press F10 to exit SMIT.

13. Continue with the next procedure, "Protecting the Optional Software and Service Update Images."

Protecting the Optional Software and Service Update Images

This procedure describes how to set the permissions for your installation images file system.

1. Type the following:

```
cd /inst.images
```

and press Enter.

2. To set the root user read, write, and search permissions and the read and search permissions for the other users of the installation images file system, type the following:

```
find . -type d -print | xargs chmod 755
```

and press Enter.

3. To give all users read permission for the installation images, type the following:

```
find . -type f -print | xargs chmod 444
```

and press Enter.

4. Do one of the following:

- If you are creating a server to install *both* BOS and optional software products, continue with the next section, "G. Create the choices File."
- If you are creating a server to install a backup image, continue with the next section, "G. Create the choices File."
- If you are creating a server to install *just* optional software products, go to "I. Make the Installation Images Available for Remote Use" on page 9-41.

G. Create the choices File

When a client system contacts the installation server, the person operating the client will see the Network Install File Selection menu. This menu shows the software that is available for installation from the server. The **/home/netinst/db/choices** file on the installation server determines which software is displayed on the Network Install File Selection menu. You must create this file and add the name of the installation images directory that you created in the previous sections. Only the installation images in the directory listed in the **choices** file will show up on the Network Install File Selection menu.

1. Type the following:

```
cd /home/netinst/db
```

and press Enter.

2. Make an entry in the **choices** file for the directory containing installation images. Use the full path name and the expansion character * (the asterisk).

Note: Make sure you type the full path name correctly or the software you just copied to your hard drive will not be displayed on the Network Install File Selection menu.

Type the following on one line:

```
echo '/inst.images/hardware_architecture/software_version/' >> choices
```

(where **/inst.images/hardware_architecture/software_version/** is the name of the directory that holds the installation images.)

and press Enter.

For example, if you were using the example names, you would type:

```
echo '/inst.images/risc_sys6000/3.2/' >> choices
```

You have finished creating the **/home/netinst/db/choices** file. Continue with the next section, "H. Create Class Description and Client Description Files."

H. Create Class Description Files and Client Description Files

At this point, you have the option of creating class description files and client description files. If you do not want to create these files now, skip to the next section, "I. Make the Installation Images Available for Remote Use," on page 9-41.

Class Description Files

A *class description file* defines a class of installation images that are listed on the Network Install File Selection menu and are available to all client machines. A *class* holds the BOS installation image and zero or more installation images of optional software products. You create one class description file for each class you want to make available for installation across the network.

The name of a class description file is `/u/netinst/db/cl.classname`, where *classname* is a descriptive name you choose for that particular class of installation images. The client can then select the desired combination of installation images by selecting the appropriate class from the Network Install File Selection menu during network installation. A sample class description file is provided with the system and is named `/u/netinst/db/class.sample`.

Client Description Files

A *client description file* functions like a class description file, except that the class described is listed on the Network Install File Selection menu only for a particular client. The name of a client custom description file is `/u/netinst/db/IPaddress`, where *IPaddress* is the IP address of the client, formatted as follows: the periods (.) between the IP address segments are deleted and each address segment is expanded with zeros to three digits if necessary, so that the *IPaddress* is twelve characters. For example, *IPaddress* for the client IP address 129.35.7.24 would be 129035007024. A sample class client description file is provided with the system and is named `/u/netinst/db/sample.client`.

A Word about Description Files

Class description files and client description files are referred to together as *description files*. Description files use the C preprocessor and can include C-style comments, `#includes`, `#defines`, and so forth. After passing through the preprocessor, blank lines are deleted.

Each record in a description file is composed of three fields: `recordname`, `recordtype`, and `recordvalue`. The `recordname` and `recordtype` must be a single word. The `recordvalue` may be any number of words but cannot span lines. For example, a class description file that bundles a BOS installation image with the installation images of four optional software products would appear similarly to the following:

```
/*
recordname           recordtype           recordvalue
*/bos                 filename                /images/bos.obj
lpp                   filename                /images/tcpip
-                     filename                /images/nfs
-                     filename                /images/xwindows
-                     filename                /images/c_compiler
```

Each `recordname` may appear only once per description file but may have multiple records associated with it. When there are multiple records of the same type in a description file, the other records must immediately follow the first record and must use the `recordname` of "_" as illustrated in the preceding example. The only required record is one for the AIX BOS installation image which requires a `recordname` of `bos`.

The `recordtype` value may be the word "filename." This means that the value following the word filename is the name of a file which will be transferred from the network installation server to the client.

If no description files are defined, the Network Install File Selection menu consists of a simple list of installable images and appears similar to the following:

NETWORK INSTALL FILE SELECTION

1. /inst.images/risc_sys6000/3.2/bos.obj
2. /inst.images/risc_sys6000/3.2/Xrte
3. /inst.images/risc_sys6000/3.2/bosnet
4. /inst.images/risc_sys6000/3.2/bssiEn_US
5. /inst.images/risc_sys6000/3.2/bsm.En_US
6. /inst.images/risc_sys6000/3.2/gnuemacs

77. Previous screen
88. Next screen
99. Return to CHANGE SETTINGS menu
0. Continue with Network Install

Choose the ID# of the file(s) to select or exclude

After defining class description files, the Network Install File Selection menu appears similar to the following:

NETWORK INSTALL FILE SELECTION

1. RISC System/6000 AIX 3.2 Development Package
 /inst.images/risc_sys6000/3.2/bos.obj
 /inst.images/risc_sys6000/3.2/Xrte
 /inst.images/risc_sys6000/3.2/bosnet
 /inst.images/risc_sys6000/3.2/gnuemacs
2. RISC System/6000 AIX 3.2 Document Preparation Package
 /inst.images/risc_sys6000/3.2/bos.obj
 /inst.images/risc_sys6000/3.2/Xrte
 /inst.images/risc_sys6000/3.2/bosnet
 /inst.images/risc_sys6000/3.2/bssiEn_US
3. /inst.images/risc_sys6000/3.2/bos.obj
4. /inst.images/risc_sys6000/3.2/Xrte
5. /inst.images/risc_sys6000/3.2/bosnet
6. /inst.images/risc_sys6000/3.2/bssiEn_US
7. /inst.images/risc_sys6000/3.2/bsm.En_US
8. /inst.images/risc_sys6000/3.2/gnuemacs

77. Previous screen
88. Next screen
99. Return to CHANGE SETTINGS menu
0. Continue with Network Install

Choose the ID# of the file(s) to select or exclude

Client description files appear similarly but are displayed only on the Network Install File Selection menu for the specified client machines.

Continue with the next section, "I. Make the Installation Images Available for Remote Use."

I. Make the Installation Images Available for Remote Use

This procedure describes how to make the installation images that were created on the installation server available to other systems on the network.

1. Type the following:

```
smit mknfsexp          (or type smit -C mknfsexp if you are working in
                        AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| Add a Directory to Exports List | | | |
|---|----------------|---|--|
| Type or select a value for the entry fields. Press Enter AFTER making all desired changes. | | | |
| | [Entry Fields] | | |
| * PATHNAME of directory to export | [] | / | |
| * MODE to export directory | read-write | + | |
| HOSTNAME list. If exported read-mostly | [] | | |
| Anonymous UID | [-2] | | |
| HOSTS allowed root access | [] | | |
| HOSTS & NETGROUPS allowed client access | [] | | |
| Use SECURE option? | no | + | |
| * EXPORT directory now, system restart or both | both | + | |
| PATHNAME of Exports file if using HA-NFS | [] | | |
| F1=Help F2=Refresh F3=Cancel F4=List | | | |
| F5=Undo F6=Command F7=Edit F8=Image | | | |
| F9=Shell F10=Exit Enter=Do | | | |

Note: Do *not* press Enter until you get to step 4.

2. PATHNAME of directory to export is highlighted. Type the following:

```
/inst.images
```

3. To protect the installation images from being accidentally deleted by other systems on the network, move the cursor to MODE to export directory.

Press the Tab key to change the default to read-only.

4. Press Enter.

A screen similar to the following displays:

| | | | |
|---|-------------|------------|------------|
| COMMAND STATUS | | | |
| Command: OK | stdout: yes | stderr: no | |
| Before command completion, additional instructions may appear below | | | |
| /inst.images | | | |
| Exported /inst.images | | | |
| F1= Help | F2= Refresh | F3= Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

5. Press F10 to exit SMIT.

You have finished creating a network installation server. Depending on the type of installation you are performing, you may need to refer to one or more of the following chapters for more information:

- For instructions on how a client system can use the network installation server to install BOS from a **mksysb** image, refer to "Chapter 3. BOS Installation from a System Backup."
- For instructions on how a client system can use the network installation server to install the Base Operating System (BOS), refer to "Chapter 4. BOS Installation from a Network."
- For instructions on how a client system can use the network installation server to install optional software, refer to "Chapter 6. Optional Software Installation."

Advanced Path: Creating an Installation Server

A. Determine Your Starting Point

If you are not already logged in as root, log in as root now.

You have two choices:

- If you are creating a server to install *just* optional software products (clients will not be installing BOS from this server), go to the section "E. Create an Installation Images File System" on page 9-44.
- If you are creating a server to install *both* BOS and optional software products, go to the next section, "B. Increase the Server's Maximum Processes Limit."

B. Increase the Server's Maximum Processes Limit

If you expect that you will never have more than nine client machines simultaneously using the server, then go to the next section, "C. Create the netinst User."

1. Calculate the number of processes needed with the following formula: number of processes needed = number of clients x 4.
2. Execute `smit chgsys` and change the Maximum number of PROCESSES allowed per user entry field to the number of processes you calculated you need.

C. Create the netinst User

1. Execute `smit mkuser` and change the following:
 - User NAME `netinst`
 - LOGIN User? `false`
 - Another user CAN SU to user? `false`
 - User CAN RLOGIN? `false`
2. Enter `cd /usr/lpp/bosinst` at the system prompt.
3. Enter `find bin db scripts -print | cpio -dumpv /home/netinst` at the system prompt.
4. Enter `cd /home/netinst` at the system prompt.
5. Enter `chmod -R 500 *` at the system prompt.
6. Enter `chown -R netinst.staff *` at the system prompt.

D. Configure the inetd Subsystem

1. Enter `smit lsservices` and check for a line similar to the following:
`instsrv 1234/tcp # network install services`
If the line is in the list, skip to step 3. Otherwise, continue with step 2.
2. Execute `smit mkservices` and change the following:
 - Official Internet SERVICE Name `instsrv`
 - Socket PORT number `1234`
3. Enter `smit lsinetd.conf` and check for a line similar to the following:
`instsrv stream tcp nowait netinst /u/netinst/bin/instsrv`
If the line is in the list, skip to step 5. Otherwise, continue with step 4.

4. Execute `smit mkinetdconf` and add the **instsrv** subserver.
5. Enter `/usr/lpp/bosinst/ninst 'hostname' curdate` at the system prompt.

If the system displays error messages, use the system messages to determine the problem and return to step 1. Otherwise, continue with the next section "E. Create an Installation Images File System."

E. Create an Installation Images File System

1. Determine the amount of space required for a file system that will contain the installation images.
2. Enter `smit crjfs` and change the following:
 - SIZE of file system (From step 1.)
 - MOUNT POINT /inst.images
 - Mount AUTOMATICALLY at system restart? yes
3. If the file system creation is successful, continue with step 4. Otherwise, do the following:
 - Use the system messages to determine the problem.
 - Press F10 to exit SMIT.
 - Return to step 2 and repeat the procedure with any necessary corrections.
4. Enter `mount /inst.images` at the system prompt.
5. Enter the following:
 (where *hardware_architecture* is the name of the architecture of the client machine and *software_version* is the version of the software)
`mkdir -p /inst.images/hardware_architecture/software_version`

F. Create Installation Images

1. Are you creating a backup image?
 YES: Go to "Creating a System Installation Image Using SMIT mksysb."
 NO: Go to step 2.
2. Are you creating both BOS and optional software product images?
 YES: Go to step 3.
 NO: Go to step 5.
3. Are you using tapes to create the BOS and optional software product images?
 YES: Go to "Creating BOS Installation Image from a Factory Tape."
 NO: I am using either a CD-ROM or diskettes.
 CD-ROM: Go to "Creating BOS Installation Image from CD-ROM."
 Diskettes: Go to "Creating BOS Installation Image from Diskette."
4. Are you using tapes or a CD-ROM to create the optional software product images?
 YES: I am using tapes or a CD-ROM. Go to "Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM."
 NO: Go to "Creating BOS Installation Image from Diskette."

5. Are you using tapes or a CD-ROM to create the optional software product images?

YES: I am using tapes or a CD-ROM. Go to "Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM."

NO: Go to "Creating Optional Software and Service Update Images from Diskette."

Creating a System Installation Image Using SMIT mkysb

1. Execute `smi mkysb` and change the following:

- FORCE increase of work space if needed `yes`
- Backup DEVICE or FILE.

Type the name of the directory that will hold the installation image followed by a slash (/) and the name you want to use for the installation image that is about to be created.

Note: The installation image must be named **bos.obj** or have the **bos.obj*** prefix.

2. If the backup is *not* successful:

- Use the system messages to determine the problem.
- Press F10 to exit SMIT.
- Perform this procedure again, with corrections, beginning with step 1.

You have finished creating and storing the backup installation image. Skip to the procedure "Protecting the Optional Software and Service Update Images."

Creating BOS Installation Image from a Factory Tape

1. Insert the factory tape labeled Version 3.2 into your tape drive.
2. Enter `cd /inst.images/hardware_architecture/software_version` (where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images).
3. Enter `lsattr -E -l rmtx` (where `x` is the numeral identifying the tape device and `l` is a lowercase "L").

If the `block_size` is 512, skip to step 5, else continue with step 4.

4. Enter `chdev -a block_size=512 -l rmtx` (where `x` is the numeral identifying the tape device and `l` is a lowercase "L").
5. Enter `dd if=/dev/rmtx of=bos_name ibs=90b obs=1b conv=sync fskip=3` (where `x` is the numeral associated with the name of the tape drive (**rmtx**) and `bos_name` is **bos.obj** or has the **bos.obj*** prefix).
6. If you changed the block size to 512 in step 4, change it to its original value by entering `chdev -a block_size=original_size -l rmtx` at the system prompt.

Go to the procedure titled "Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM."

Creating BOS Installation Image from CD-ROM

1. If you are accessing InfoExplorer from CD-ROM and you want to create a BOS installation image from the same CD-ROM device, you must first enter:
`umount /usr/lpp/info/Language` (where `Language` is the name of the language you are using) and eject the InfoExplorer CD-ROM.
2. Insert the CD-ROM containing the BOS installation image into the CD-ROM device.
3. Enter `lsdev -Cc cdrom` and note the number of your CD-ROM device.
4. Enter `mount -o ro -v cdrfs /dev/cdx /mnt` (where `x` is the number of your CD-ROM device).

5. To copy the BOS installation image from the CD-ROM to your hard disk, enter
`cp /mnt/bos.obj /inst.images/hardware_architecture/software_version`
(where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images).

6. Enter `umount /mnt` to unmount the CD-ROM device.

Go to the procedure titled "Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM."

Creating BOS Installation Image from Diskette

1. Enter `cd /inst.images/hardware_architecture/software_version`
(where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images).

2. Insert the first BOS diskette.

3. Enter `dd if=/dev/rfdx bs=90b | cat >> bos_name`
(where `x` is the numeral associated with the name of the diskette drive (`rfdx`) and `bos_name` is `bos.obj` or has the `bos.obj*` prefix).

4. Remove the diskette, insert the next diskette, and repeat step 3.

Note: If you are using the Korn Shell (ksh), you can enter `r` instead of reentering the entire command. The `r` means to redo the last command.

Go to "Creating Optional Software and Service Update Images from Diskette."

Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM

1. Insert the factory tape labeled Version 3.2 into your tape drive.

2. Execute `smit instupdt_for_net` and change the following:

- SOFTWARE name

If you are creating a server to install *both* BOS and optional software products, select the products **bos**, **bosnet**, **bsl**, and **bsmLanguage**. Then select any additional products you want to make available.

Note: If you are using a Fiber Distributed Data Interface (FDDI) network, you must also select the FDDI software option (**fddi.obj**) and the FDDI microcode option (**fddi.mc**).

If you are creating a server to install *just* optional software products, select the products you want to make available.

- DIRECTORY for storing software

Go to "Protecting the Optional Software and Service Update Images."

Creating Optional Software and Service Update Images from Diskette

1. Insert the first diskette of a software product into the diskette drive.

2. Execute `smit instupdt_for_net` and change the following:

- SOFTWARE name

If you are creating a server to install *both* BOS and optional software products, select the products **bos**, **bosnet**, **bsl**, and **bsmLanguage**. Then select any additional products you want to make available.

Note: If you are using a Fiber Distributed Data Interface (FDDI) network, you must also select the FDDI software option (**fddi.obj**) and the FDDI microcode option (**fddi.mc**).

If you are creating a server to install *just* optional software products, select the products you want to make available.

- DIRECTORY for storing software
- DIRECTORY for temporary storage during copying

If the **/tmp** file system is not large enough, then type the name of a directory within a file system that contains enough disk space to restore the software.

3. Repeat steps 1 and 2 for each software product that you want to make available on the installation server.

Continue with the next procedure, "Protecting the Optional Software and Service Update Images."

Protecting the Optional Software and Service Update Images

1. Enter `cd /inst.images` at the system prompt.
2. Enter `find . -type d -print | xargs chmod 755` at the system prompt.
3. Enter `find . -type f -print | xargs chmod 444` at the system prompt.

If you are creating a server to install *just* optional software products, go to "I. Make the Installation Images Available for Remote Use." Otherwise, continue with the next section, "G. Create the choices File."

G. Create the choices File

Enter `echo '/inst.images/hardware_architecture/software_version/' >> /home/netinst/db/choices` on one line where `/inst.images/hardware_architecture/software_version/` is the name of the directory that holds the installation images.

H. Create Class Description Files and Client Description Files

For a discussion of class description files and client description files, refer to page 9-39. Then, return here and continue with the next section.

I. Make the Installation Images Available for Remote Use

Execute `smit mknfsexp` and change the following:

- PATHNAME of directory to export `/inst.images`
- MODE to export directory `read-only`

You have finished creating a network installation server. Depending on the type of installation you are performing, you may need to refer to the following chapters for more information:

- For instructions on how a client system can use the network installation server to install BOS from a **mksysb** image, refer to "Chapter 3. BOS Installation from a System Backup."
- For instructions on how a client system can use the network installation server to install the Base Operating System (BOS), refer to "Chapter 4. BOS Installation from a Network."
- For instructions on how a client system can use the network installation server to install optional software, refer to "Chapter 6. Optional Software Installation."

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **cd** command, **chmod** command, **chown** command, **dd** command, **df** command, **find** command, **inetd** daemon, **mkdir** command, **mount** command, **smit** command, and **xargs** command.

The Backup Overview in *System Management Guide* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *System Management Guide* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

DISKLESS
INSTALLATION

Chapter 10. Diskless System Installation

This chapter contains procedures for creating a new diskless community and procedures for adding clients and software to an existing diskless community.

Note: Diskless, dataless, and remote */usr* systems are not supported over a Fiber Distributed Data Interface (FDDI) network.

Note: NetWare v3.11 can run on a diskless server but not on a diskless client.

This chapter contains the following sections:

- Introduction to Diskless System Installation 10-1
- A Word about LAN-Dependent Workstations 10-1
- Where Do I Go in This Chapter? 10-2
 - Part 1: Creating A Version 3.2 Diskless Server 10-3
 - Part 2: Creating a Non-AIX Version 3.2 Diskless Server 10-33
 - Part 3: Installing Optional Software and Service Updates 10-47
 - Part 4: Starting a Diskless Client for the First Time 10-69

Introduction to Diskless System Installation

Diskless workstations remotely access a boot image and a file tree. Diskless workstations are referred to as *clients* of a server. *Diskless servers* are machines that provide file trees and boot images for diskless clients. The combination of a server and its clients can be referred to as a *diskless community*.

This chapter contains simplified versions of some of the installation procedures covered in the *Diskless Workstation Management (DWM) Guide and Reference*. This chapter contains procedures for creating and modifying the simplest type of diskless community – a single server that provides all resources for the diskless clients. Alternately, client resources can be distributed among several servers. If you need to create a more complex type of community, you should use the installation procedures in the *DWM Guide and Reference*.

Note: You should read the section titled “Diskless Workstation Management Introduction” in the *Diskless Workstation Management Guide* before you begin the installation procedures in this chapter.

A Word about LAN-Dependent Workstations

All systems require access to a file tree in order to function properly. Additionally, all systems require a paging and dump device. They also need a boot image, which is used to boot (start up) the system. These dependencies can be fulfilled by local or remote file systems. *Local* means that a file system is stored on a disk that is connected to the system; *remote* specifies that the file system is stored on another machine and that it is accessed via the network. The location of these file systems defines the type of system: *standard*, *diskless*, *dataless*, or *remote /usr*.

The following chart shows how each file system is accessed for the different types of configurations:

| file systems | TYPES OF SYSTEMS | | | |
|--------------------------------------|------------------|----------|--------------|--------------|
| | standard | diskless | dataless | remote/usr |
| / | local | remote | remote | local |
| /usr | local | remote | remote | remote |
| /var | local | remote | remote | local |
| /tmp | local | remote | remote | local |
| /home | local | remote | remote | local |
| other file systems | local/remote | remote | local/remote | local/remote |
| boot image | local | remote | remote | local |
| paging | local | remote | local | local |
| dump | local | remote | local | local |
| Remote boot ROM function required | no | yes | yes | no |

As the chart shows, the degree of network dependency corresponds to the machine's configuration. For diskless machines, all resources are remote, so they are totally dependent on a functioning network. Dataless machines are similar, except that they have a local paging and local dump device (**/home** can be local by modifying **/etc/filesystems** file). A remote **/usr** machine uses the network to access a **/usr** filesystem only; everything else is local. And a standard system accesses everything locally. Note that in the remote **/usr** and standard configurations, accessing other remote file systems is possible; however, it is the user's responsibility to set this up.

Where Do I Go in This Chapter?

To find your starting point in this chapter, answer the following questions until you reach an answer that sends you to a specific part or section in this chapter.

- Are you creating a *new* diskless server?
 - YES: I am creating a *new* diskless server. Go to question 2.
 - NO: I am adding or updating a client or installing optional software or updates to an existing server. Go to question 3.
- Is the machine that will be the diskless server running Version 3.2?
 - YES: It is running Version 3.2. Go to "Part 1: Creating a V3.2 Diskless Server" on page NO TAG.
 - NO: It is running Version 3.1.x or any other operating system. Go to "Part 2: Creating a non-AIX Version 3.2 Diskless Server" on page 10-33.
- Are you installing software or updates?
 - YES: I am installing optional software or updates. Go to "Part 3: Installing and Updating Optional Software" on page 10-47.
 - NO: I am adding a *new* client or updating an *existing* client. Go to question 4.
- Are you adding a *new* client to an existing server?
 - YES: I am adding a *new* client on an existing server. Go to question 5.
 - NO: I am updating an *existing* client to use local paging. Go to "F. Convert a Diskless Client into a Dataless Client" on page 10-85.
- Is the *existing* server running Version 3.2?
 - YES: It is running Version 3.2. Go to "E. Increase the Size of a File System" on page 10-24.
 - NO: It is running Version 3.1.x or any other operating system. Go to "E. Increase the Size of a File System" on page 10-44.

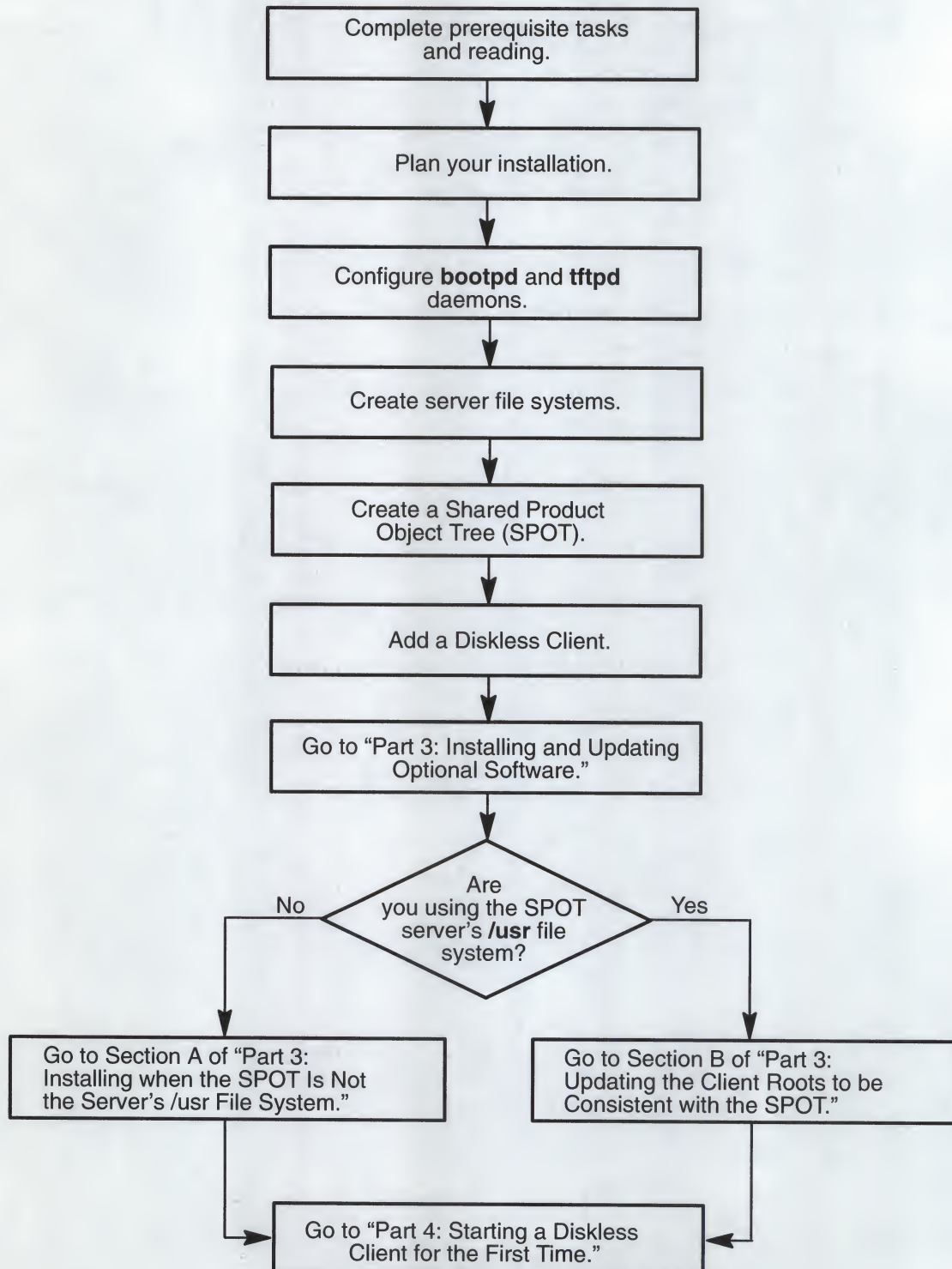
Part 1: Creating a Version 3.2 Diskless Server

This part of Chapter 10 contains the following sections:

- Flow Chart for Creating a Version 3.2 Diskless Server 10-4
- Prerequisite Tasks and Conditions 10-5
- Procedure for Creating a Version 3.2 Diskless Server 10-6

Flow Chart for Creating a Version 3.2 Diskless Server

This flow chart shows the basic steps you must perform to create a diskless server from an installed system.



Prerequisite Tasks and Conditions

The following steps must be completed before you can begin the procedures in this section:

1. To create a diskless community you must have workstations available that can function as diskless clients. The following POWERstations can be used as diskless clients: Model 7011 Type 220, Model 7012 Types 340 or 350.
2. An Ethernet or Token-Ring network adapter must be installed on your diskless server.
3. You should be familiar with the basics of network configuration. For basic network configuration information refer to the manual titled *Communication Concepts and Procedures*.
4. You should be familiar with your basic hardware operations. For basic hardware information, refer to "Chapter 18. Hardware Basics" or your hardware documentation.
5. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
6. TCP/IP and NFS software must already be installed on your diskless server.

a. If you are not already logged in as root on your diskless server, log in as root now.

b. To see if TCP/IP and NFS are installed, type the following:

```
lslpp -L bosnet.*
```

and press Enter.

If the message `There is no product in ...` is displayed, you will have to install the "Base Operating System Network Facilities (BOSNET)" optional software product. Go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products. Then, return here and continue with the next step.

7. TCP/IP and NFS software must be configured on your diskless server.

a. To see if TCP/IP is configured, type the following:

```
lssrc -s sendmail
```

and press Enter.

If the status of `sendmail` shows inoperative, you must configure TCP/IP. Go to "Chapter 14. Network Configuration" and following the procedures for configuring TCP/IP; then, return here continue with the next step b.

b. To see if NFS is configured, type the following:

```
lssrc -s lockd
```

and press Enter.

If the status of `lockd` shows inoperative, you must configure NFS. Go to "Chapter 14. Network Configuration" and following the procedures for configuring NFS; then, return here continue with step 8.

8. To read the diskless README file, type the following:

```
pg /usr/lpp/bos/README.diskless
```

and press Enter.

Procedure for Creating a Version 3.2 Diskless Server

This part of chapter 10 contains instructions for preparing diskless servers that are running Version 3.2. This part of chapter 10 will take you through the following procedures:

- A. Plan Your Installation
- B. Configure the bootpd and tftpd Daemons
- C. Create File Systems to Serve Diskless Clients
- D. Create a Shared Product Object Tree (SPOT)
- E. Increase the Size of a File System
- F. Add a Diskless Client

Continue with the next section when you are ready to begin the installation.

A. Plan Your Installation

Your first task is to decide which method you want to use to create the Shared Product Object Tree (SPOT) and what you want to name your SPOT.

There are two methods to create a SPOT.

The first method is to create a SPOT by using the server's existing **/usr** file system. This procedure saves disk space, approximately 70MB, on the SPOT server because there is only one copy of the Version 3.2 file tree. All the Optional Program Products on the server that are installed before the SPOT is created will be accessible by the client. This is also the fastest and simplest method for creating a SPOT.

The second method is to create a SPOT by installing a second copy of the BOS Version 3.2 file tree onto the server. You would do this if you wanted to install a limited or extended set of optional software for your diskless clients.

In both methods, the root portion of the Optional Program Products can be installed before you boot your system for the first time, or they can be installed during the first boot process.

1. Decide which method you want to use to create your SPOT.
2. Decide what you want to name your SPOT. For example, if you are creating a SPOT for a group of engineers, you could name your SPOT engineering.
3. If you are creating a SPOT by using the server's existing **/usr** file system, complete the Creating File Systems Plan (Using the Server's **/usr**) beginning on page 16-20.

If you are creating a SPOT by installing the operating system, complete the Creating File Systems Plan (Installing the Operating System) beginning on page 16-18.

After you have completed the appropriate plan, return here and continue with the next section, "B. Configure the bootpd and tftpd Daemons."

B. Configure the bootpd and tftpd Daemons

The first step is to configure the **bootpd** and **tftpd** daemons. The **bootpd** and **tftpd** daemons will be added to the list of inetd subservers.

PROCEDURE

1. If you are not already logged in as root on the machine you want to use as your diskless server, log in as root now.
2. Check to see if the **bootps** subserver is already available.
Type the following:

```
smit lsinetdconf      (or smit -C lsinetdconf if you are working inside
                      AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | | | | |
|---|-------------|-------------|--------------------|---------------|----------------|-----------|
| Command: OK | | stdout: yes | | stderr: no | | |
| Before command completion, additional instructions may appear below | | | | | | |
| [TOP] | | | | | | |
| servname Name | Type | Socket | protname Nowait | Wait/ User | Server Program | Arguments |
| echo | stream | tcp | nowait | root | internal | |
| echo | dgram | udp | wait | root | internal | |
| discard | stream | tcp | nowait | root | internal | |
| discard | dgram | udp | wait | root | internal | |
| daytime | stream | tcp | nowait | root | internal | |
| [MORE...15] | | | | | | |
| F1= Help | F2= Refresh | F3= Cancel | F6=Command | | | |
| F8=Image | F9=Shell | F10=Exit | | | | |

3. Scroll through the list and look for a line similar to the following:

```
bootps  dgram  udp      wait    root    /etc/bootpd bootpd
```

If the line is in the list, skip to step 8 on page 10-11.

If it is *not* in the list, press F10 to exit SMIT and continue with step 4.

4. Type the following:

smit diskless (or smit -C diskless if you are working inside
AIXwindows.)

and press Enter.

A screen similar to the following displays:

Diskless Workstation Management and Installation

Move cursor to desired item and press Enter.

- Start Daemons on Server
- Shared Product Object Trees (SPOTs)
- Install / Update Software
- List Installed Software
- Verify a Software Product
- Verify Consistent Installation Level
- Manage Clients

F1=Help
F9=Shell

F2=Refresh
F10=Exit

F3=Cancel
Enter=Do

F8=Image

5. Start Daemons on Server is already highlighted
Press Enter.

A screen similar to the following displays:

Start Daemons on Server

Move cursor to desired item and press Enter.

- Start BOOTP daemon
- Configure NFS (if Not Already Configured)
- Start TFTP daemon

F1=Help
F9=Shell

F2=Refresh
F10=Exit

F3=Cancel
Enter=Do

F8=Image

6. Start BOOTP Daemon is highlighted.
Press Enter.

A screen similar to the following displays:

Start BOOTP Daemon

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

BOOTPTAB pathname

[Entry Fields]
[/etc/bootptab]

F1=Help
F5=Undo
F9=Shell

F2=Refresh
F6=Command
F10=Exit

F3=Cancel
F7=Edit
Enter=Do

F4=List
F8=Image

7. The default **BOOTPTAB** location is displayed. Generally, this default is acceptable and you should now just press Enter. However, if you want to specify a different locations, type it in now and then press Enter.

A screen similar to the following displays:

COMMAND STATUS

Command: OK stdout: yes stderr: no

Before command completion, additional instructions may appear below

0513-095 The request for subsystem refresh was completed successfully.

F1= Help
F8=Image

F2= Refresh
F9=Shell

F3= Cancel
F10=Exit

F6=Command

8. Press F10 to exit SMIT.

9. Next check to see if the **tftp** subserver is already active.

Type the following:

`smit lsinetdconf` (or `smit -C lsinetdconf` if you are working inside AIXwindows.)

and press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | | | | |
|---|-------------|-------------|----------|------------|----------|----------------|
| Command: OK | | stdout: yes | | stderr: no | | |
| Before command completion, additional instructions may appear below | | | | | | |
| [TOP] | | | | | | |
| servname | Type | Socket | protname | Wait/ | User | Server Program |
| Name | | | Nowait | | | Arguments |
| echo | stream | tcp | nowait | root | internal | |
| echo | dgram | udp | wait | root | internal | |
| discard | stream | tcp | nowait | root | internal | |
| discard | dgram | udp | wait | root | internal | |
| daytime | stream | tcp | nowait | root | internal | |
| [MORE...15] | | | | | | |
| F1= Help | F2= Refresh | F3= Cancel | | F6=Command | | |
| F8=Image | F9=Shell | F10=Exit | | | | |

10. Scroll through the list and look for a line similar to the following:

`tftp dgram udp wait nobody /etc/tftpd tftpd -n`

If the line is in the list, skip to step 17 on page 10-14.

If it is *not* in the list, press F10 to exit SMIT and continue with step 11.

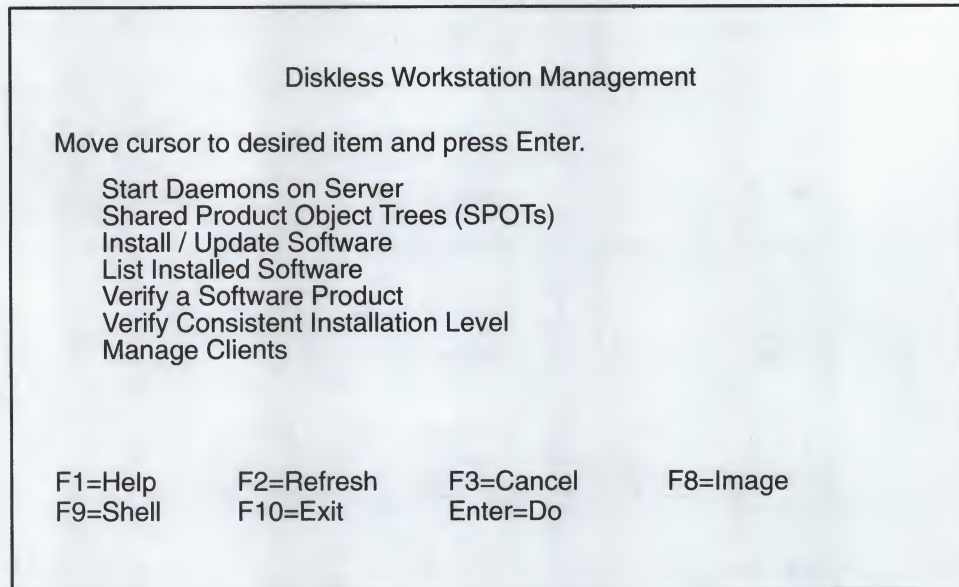
11. Type the following:

`smit diskless`

(or `smit -C diskless` if you are working inside AIXwindows.)

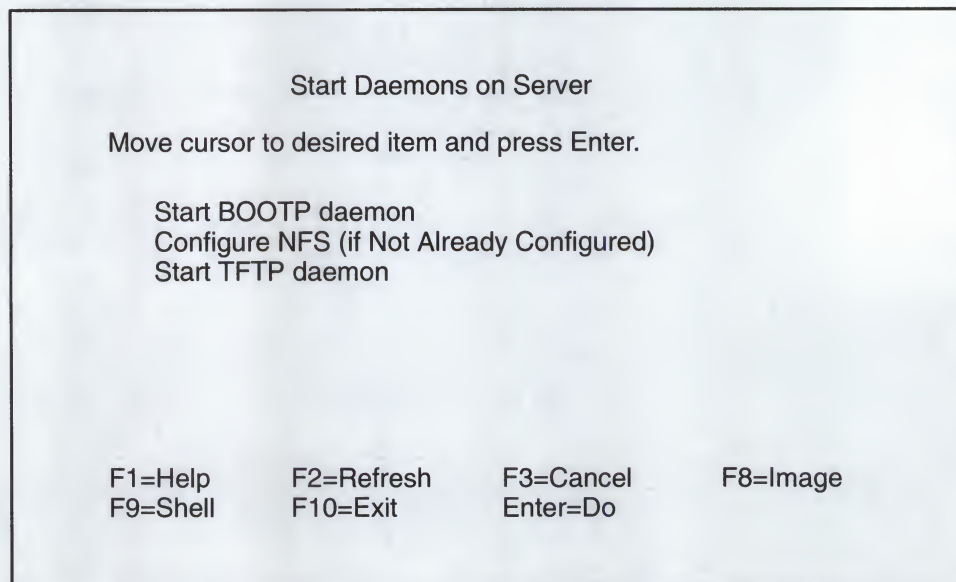
and press Enter.

A screen similar to the following displays:



12. `Start Daemons on Server` is already highlighted.
Press Enter.

A screen similar to the following displays:



13. Move the cursor to `Start TFTP Daemon`.
Press `Enter`.

A screen similar to the following displays:

Add an inetd Subserver

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* Available Subservers

[Entry Fields]
[] +

F1=Help
F5=Undo
F9=Shell

F2=Refresh
F6=Command
F10=Exit

F3=Cancel
F7=Edit
Enter=Do

F4=List
F8=Image

14. `Available Subservers` is highlighted.
To see a selection list of available subservers, press `F4`.
A screen similar to the following displays:

Add an inetd Subserver

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* Available Subservers

[Entry Fields]
[] +

Available Subservers

Move cursor to desired item and press Enter.

comsat udp
finger tcp
instsrv tcp
talk udp
tftp udp

F1
F5
F9

F1 = Help
F8=Image

F2 = Refresh
F10=Exit

F3 = Cancel
Enter=Do

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15. Move the cursor to `tftp udp`.
Press Enter.

A screen similar to the following displays:

| Add an inetd Subserver | | | |
|---|----------------|--|---|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| | [Entry Fields] | | |
| * Internet SERVICE Name | [tftp] | | + |
| * Transport PROTOCOL | udp | | + |
| * SOCKET Type | dgram | | + |
| * WAIT for Server to Release Socket | nowait | | |
| * USER Name | [nobody] | | |
| * Service Program PATH Name | [etc/tftpd] | | |
| * Service Program Command Line ARGUMENTS | [tftpd -n] | | |
| F1=Help F2=Refresh F3=Cancel F4=List | | | |
| F5=Undo F6=Command F7=Edit F8=Image | | | |
| F9=Shell F10=Exit Enter=Do | | | |

16. To make the **tftpd** subserver available, press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | |
|--|--|--|--|
| Command: OK stdout: yes stderr: no | | | |
| Before command completion, additional instructions may appear below | | | |
| 0513-095 The request for subsystem refresh was completed successfully. | | | |
| F1= Help F2= Refresh F3= Cancel F6=Command | | | |
| F8=Image F9=Shell F10=Exit | | | |

17. Press F10 to exit SMIT.

Continue with the next section, "C. Create File Systems to Serve Diskless Clients."

C. Create File Systems to Serve Diskless Clients

This section describes how to create file systems to serve diskless clients.

These file systems are created to store the file tree. You want to use these file systems instead of using the root file system because these file systems can be deleted later if you need to recover disk space.

Additionally, it is recommended that, if possible, you create these file systems in a nonroot volume group. This will allow you to upgrade the system without affecting these file systems. Use the **smit mkvg** command if you want to create a nonroot volume group.

Creating the File Systems

Refer to your Creating File Systems worksheet. The following procedure must be repeated for each of the following file systems:

- **/export/root**
- **/export/home**
- **/export/dump**
- **/export/swap**
- **/tftpboot**

If you are creating a SPOT by installing the Version 3.2 operating system, you will also need to repeat this procedure for the two additional file systems:

- **/export/exec**
- **/export/share**

PROCEDURE

1. If you are not already logged in as root onto the machine you want to use as your diskless server, log in as root now.

2. Type the following:

`smit crjfs` (or `smit -C crjfs` if you are working inside AIXwindows.)

and press Enter.

A screen similar to the following displays:

Volume Group Name

Move cursor to desired item and press Enter.

rootvg

F1 = Help

F2 = Refresh

F3 = Cancel

F8=Image

F10=Exit

Enter=Do

Note: It is recommended that you select a nonroot volume group if any exist on the system.

3. Select the volume group where you want to create the file system.

A screen similar to the following displays:

| Add a Journaled File System | | |
|--|--------------------------|---|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | |
| Volume group name | [Entry Fields] rootvg | |
| * SIZE of file system (in 512-byte blocks) | [] | # |
| * MOUNT POINT | [] | |
| Mount AUTOMATICALLY at system restart? | no | + |
| PERMISSIONS | read-write | + |
| Mount Options | [] | + |
| F1 = Help F2 = Refresh F3 = Cancel F4 = List F5 = Undo F6 = Command F7=Edit F8 = Image F9 =Shell F10=Exit Enter=Do | | |

Note: Do *not* press Enter until you get to step 6.

4. Move the cursor to Mount AUTOMATICALLY at system restart?
Press the Tab key to change the default to yes.
5. Refer to your Creating File Systems worksheet. Type the information from the worksheet to the following fields on the Add a Journaled File System screen:
 - Size of the file system
 - Mount Point

6. To create the file system, press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | |
|---|-------------|------------|------------|
| Command: OK | stdout: yes | stderr: no | |
| Before command completion, additional instructions may appear below | | | |
| New File System size is 229376 | | | |
| | | | |
| F1= Help | F2= Refresh | F3= Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

Note: It is OK for the size on the COMMAND STATUS screen to be larger than the value you entered. File system sizes are automatically rounded up to the next higher unit size. Also, if you mistyped any values or did not change the `Mount AUTOMATICALLY at system restart?` field to `yes`, you can make corrections in the next procedure, "Mounting and Verifying the File Systems."

7. If the file system creation is successful, continue with step 8.

If the file system creation is *not* successful, use the system messages to determine the problem. Press F10 to exit SMIT. Return to step 2 on page 10-15 and repeat the procedure with any necessary corrections.

8. Check the box next to the file system you just added on your worksheet.

9. Are *all* the file systems listed below checked off on your worksheet?

- `/export/root`
- `/export/home`
- `/export/dump`
- `/export/swap`
- `/tftpboot`
- `/export/exec` (optional, only if you are installing the operating system into the SPOT)
- `/export/share` (optional, only if you are installing the operating system into the SPOT)

NO: Press F3 twice and return to step 3 on page 10-16.

YES: Press F10 to exit SMIT and continue with the next procedure, "Mounting and Verifying the File Systems."

Mounting and Verifying the File Systems PROCEDURE

1. To mount the file systems, type the following:

```
mount -a -v jfs
```

and press Enter.

Note: You can ignore any messages indicating a file system is already mounted.

2. To verify the file systems are mounted and have the correct size, type the following:

```
df | grep /dev/lv
```

and press Enter.

The system displays information on your screen similar to the following:

| | | | | | | |
|-----------|-------|-------|----|----|----|--------------|
| /dev/lv00 | 4096 | 3972 | 3% | 16 | 1% | /export/root |
| /dev/lv01 | 12288 | 11920 | 3% | 16 | 0% | /export/home |
| /dev/lv02 | 8292 | 7940 | 3% | 16 | 1% | /export/dump |
| /dev/lv03 | 36864 | 35760 | 3% | 16 | 0% | /export/swap |
| /dev/lv04 | 4096 | 3964 | 3% | 16 | 1% | /tftpboot |

If you are creating a SPOT by installing the operating system, you should also see these file systems:

| | | | | | | |
|-----------|-------|-------|----|----|----|---------------|
| /dev/lv05 | 71680 | 70960 | 1% | 16 | 0% | /export/exec |
| /dev/lv06 | 4096 | 3972 | 3% | 16 | 1% | /export/share |

3. Check the last column from the listing in step 2 and make sure that *all* of the file systems on your worksheet are in the list on the screen.
 - If you mistyped the mount point of the file system when you added it, use the **smit umount** command to unmount the file system, the **smit chjfs** command to change the name of the file system to the correct mount point, and then return to step 1.
 - If you did not create a file system with the Mount AUTOMATICALLY at system restart? field set to *yes*, use the **smit chjfs** command to set it to *yes*, and then return to step 1.
 - If the system does not display all the file systems on your worksheet, return to the procedure "Creating the File Systems" on page 10-15 and create the missing file systems. Then, repeat this procedure starting with step 1.
4. Next, check the second column from the listing in step 2 and make sure that *all* of the file system sizes are correct. The file system sizes in step 2 are in 1024-byte blocks and not 512-byte blocks that were used on your worksheet. Use the following steps to convert the worksheet numbers so that you can compare them to the screen:
 - a. For each file system on your worksheet, divide the size of the file system by 2 and write it down on your worksheet.
 - b. Next, compare each of the new size values on your worksheet to the size listed on the screen for each file system.
 - c. If the size on the screen is smaller than the new size on the worksheet, you must increase the size of that file system. It is OK for the size on the screen to be larger than the new size on your worksheet.
 - d. If you need to increase the size of a file system, use the **smit chjfs** command. Be sure to use your original value and not the value from step 4a.

Continue with the next section, "D. Create a Shared Product Object Tree (SPOT)."

D. Create a Shared Product Object Tree (SPOT)

This section describes how to create a Shared Product Object Tree (SPOT).

- If you want to create a SPOT that uses the diskless server's existing **/usr** file system, continue with the procedure "Creating a SPOT Using the Server's /usr File System."
- If you want to create a SPOT by installing Version 3.2, go to the procedure "Creating a SPOT by Installing Version 3.2."

Creating a SPOT Using the Server's /usr File System

PROCEDURE

1. If you are not already logged in as root on your diskless server, log in as root now.
2. To create the SPOT, type the following:

```
mkspot -A /usr -v SPOTNAME
```

 (where *SPOTNAME* is the name you want to call your SPOT.)

and press Enter.

A series of messages will appear as the SPOT is created. When the process is complete, the system prompt will reappear.

3. To start the necessary daemons, do the following:

- a. Type the following:

```
startsrc -s portmap
```

and press Enter.

- b. Type the following:

```
startsrc -g nfs
```

and press Enter.

Note: You can ignore any messages indicating an NFS subsystem is already started.

You have finished creating your SPOT. Go to the section titled "F. Add a Diskless Client" on page 10-27.

Creating a SPOT by Installing Version 3.2

PROCEDURE

1. If you are not already logged in as root on your diskless server, log in as root now.
2. Are you installing from CD-ROM?
 - NO: Go to step 3.
 - YES: Read the following warning.

Warning: If you are accessing InfoExplorer from your CD-ROM (as described in "Chapter 13. Mounting the InfoExplorer CD-ROM") and you want to install BOS Version 3.2 from the same CD-ROM drive, you must first perform the following procedures before you invoke SMIT to add the SPOT:

- a. Type the following:

```
umount /usr/lpp/info/Language    (where Language is the name of the
                                   language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the CD-ROM that you are using to install into the SPOT into a disc caddy, and insert the caddy into the CD-ROM drive.

During the installation, SMIT will create and mount a temporary mount point for the CD-ROM drive.

3. Type the following:

```
smit diskless    (or smit -C diskless if you are working in AIXwindows.)
and press Enter.
```

A screen similar to the following displays:

Diskless Workstation Management and Installation

Move cursor to desired item and press Enter.

Start Daemons on Server
Shared Product Object Trees (SPOTs)
Install / Update Software
List Installed Software
Verify a Software Product
Verify Consistent Installation Level
Manage Clients

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

4. Move the cursor to **Manage Shared Product Object Trees (SPOTs)**. Press Enter.

A screen similar to the following displays:

Shared Product Object Trees (SPOTs)

Move cursor to desired item and press Enter.

List All SPOTS
List all Clients on a SPOT
Show Characteristics of a SPOT
Add a SPOT
Remove a SPOT

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

5. Move the cursor to **Add a SPOT** and press Enter.

A screen similar to the following displays:

Add a SPOT

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | | |
|------------------------------------|-------------------------|---|
| * | [Entry Fields] | |
| SPOT name | [] | |
| INPUT device/INPUT SPOT name | [/dev/rmt0.1] | + |
| SPOT SERVER hostname | [atlas] | |
| PARENT directory of the SPOT | [/export/exec] | |
| BOOT SERVER hostname | [atlas] | . |
| BOOTIMAGE directory | [/tftpboot] | |
| BOOTPTAB | [/etc/bootptab] | |
| SHARE SERVER hostname | [atlas] | |
| SHARE (/usr/share) directory | [/export/share/AIX/usr] | |
| DETAILED messages during creation? | [yes] | + |

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

Note: Do not press Enter again until you get to the end of step 7.

6. SPOT name is highlighted. Type the name for the SPOT you are adding.

7. Move the cursor to INPUT device/INPUT SPOT name. Press F4 to show a list of input devices.

Add a SPOT

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

* SPOT name [] +

INPUT device / INPUT SPOT name

Move cursor to desired item and press Enter.

/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
engineers

| | | |
|-----------|--------------|-----------|
| F1 = Help | F2 = Refresh | F3=Cancel |
| F5 | F10=Exit | Enter=Do |
| F9 | | |

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

Note: When making a SPOT with the CD-ROM device using **mkspot** on the command line, the CD-ROM device must be mounted on a CD-ROM file system before the command can be issued. The input device (**-f** flag) for the **mkspot** command must be the full path to the **bos.obj** file in the directory on which the CD-ROM is mounted. For example, **/mnt/cd/bos.obj**.

9. If you are installing from tape, insert the factory tape labeled Version 3.2 into the drive. If you are installing from CD-ROM, place the CD-ROM into a disc caddy, and insert the caddy into the CD-ROM drive.

10. To create the SPOT, press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | |
|--|-------------|------------|------------|
| Command: OK | stdout: yes | stderr: no | |
| Before command completion, additional instructions may appear below | | | |
| processing files for "composers" SPOT creating the "bach:/export/exec/composers/usr" directory initializing the SPOT with files from "/dev/rmt0.1" | | | |
| F1= Help | F2= Refresh | F3= Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

11. When `Command:running` changes to `Command:OK`, press F10 to exit SMIT.

12. To start the necessary daemons, do the following:

a. Type the following:

```
startsrc -s portmap
```

and press Enter.

b. Type the following:

```
startsrc -g nfs
```

and press Enter.

Note: You can ignore any messages indicating an NFS subsystem is already started.

13. Go to section "F. Add a Diskless Client" on page 10-27.

E. Increase the Size of a File System

The section describes how to calculate the new sizes of the diskless server's file systems. You may have to increase the size of the following file systems: **/export/home**, **/export/root**, and **/export/swap**.

Calculating Size Needed for Increasing a File System

PROCEDURE

1. To calculate the size needed for increasing the root file system, use the formula:

file system size = number of new clients you are adding x 4 x 2048.

Write down the number and label it "root."

2. To calculate the size needed for increasing the home file system, use the following formula:

file system size = number of MB per user x number of users on all new clients x 2048.

For example, if you want to allow 1.5MB of hard disk space per user and you have 10 users, you would increase the home file system by 30720.

Write down the number and label it "home."

3. To calculate the size needed for increasing the paging file system, use the following formula:

file system size = total number of MB of RAM for all new clients x 2 x 2048.

To find the amount of RAM (memory) that was shipped with the client, refer to the "About Your Machine" document that came with your client.

Write down the number and label it "swap."

Continue with the next procedure, "Changing the Size of a File System."

Changing the Size of a File System

This procedure will be repeated for the following file systems:

- **/export/root**
- **/export/home**
- **/export/swap**

PROCEDURE

1. If you are not already logged in as root on your diskless server, log in as root now.

2. Type the following:

`smit chjfs` (or `smit -C chjfs` if you are working inside AIXwindows.)

and press Enter.

A screen similar to the following displays:

File System Name

Move cursor to desired item and press Enter.

/

/home

/usr

/var

/tmp

/export/root

/export/home

/export/dump

/export/swap

/tftpboot

F1 = Help

F2 = Refresh

F3 = Cancel

F8=Image

F10=Exit

Enter=Do

3. Move the cursor to select one of the following file systems and press Enter:

- **/export/root**
- **/export/home**
- **/export/swap**

A screen similar to the following displays:

Change / Show Characteristics of a Journaled File System

Type or select values in entry fields.

Press Enter AFTER making all desired changes.

[Entry Fields]

File system name

NEW mount point

SIZE of file system (in 512-byte blocks)

Mount GROUP

Mount AUTOMATICALLY at system restart?

PERMISSIONS

Mount OPTIONS

/export/home

[/export/home]

[8192]

[]

yes

read-write

[]

#

+

+

+

F1=Help

F2=Refresh

F3=Cancel

F4=List

F5=Undo

F6=Command

F7=Edit

F8=Image

F9=Shell

F10=Exit

Enter=Do

4. Move the cursor to `SIZE` of file system (in 512-byte blocks).
5. Add to the number in the entry field the size you calculated in the procedure "Calculating Size Needed for Increasing a File System" for the file system you are increasing.

6. Press Enter. A Command Status screen appears.

If the `Command:` status indicator changes to `OK`, continue with step 7.

If the `Command:` status indicator changes to `failed`, do the following:

- a. Use the system messages to determine the problem.
- b. Press F10 to exit SMIT.
- c. Return to step 2 on page 10-25 and repeat the procedure with any necessary corrections.

7. Have you successfully increased the size for *all* of file systems listed below?

- **`/export/root`**
- **`/export/home`**
- **`/export/swap`**

NO: Press F3 twice and return to step 3 on page 10-25.

YES: Press F10 to exit SMIT and continue with the next procedure, "F. Add a Diskless Client."

F. Add a Diskless Client

This section describes how to add a diskless client to your diskless community. You will need to repeat the steps in this section for each diskless client you want to add.

PROCEDURE:

Before you begin this procedure, you must fill out a plan for each client you want to add (see page 16-22 "Adding a Diskless Client").

1. If you are not already logged in as root on your diskless server, log in as root now.
2. Type the following:

```
smit diskless          (or smit -C diskless if you are working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

Diskless Workstation Management and Installation

Move cursor to desired item and press Enter.

- Start Daemons on Server
- Shared Product Object Trees (SPOTs)
- Install / Update Software
- List Installed Software
- Verify a Software Product
- Verify Consistent Installation Level
- Manage Clients

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Move the cursor to `Manage Clients`.
Press `Enter`.

A screen similar to the following displays:

Manage Clients

Move cursor to desired item and press `Enter`.

List All Diskless Clients
Add a Host
Add a Diskless Client
Change / Show Client SPOT
Change / Show Characteristics of a Client
Remove a Diskless Client

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

4. You have two choices:

If you are using a nameserver, skip to step 10 on page 10-29.

If you are *not* using a nameserver, continue with step 5.

5. First, you need to make the client's name and network address known to the server.
Move the cursor to `Add a Host` and press `Enter`.

A screen similar to the following displays:

Add a Host Name

Type or select values in entry fields.
Press `Enter` AFTER making all desired changes.

| | |
|---|----------------|
| | [Entry Fields] |
| * INTERNET ADDRESS (dotted decimal) | [] |
| * HOST NAME | [] |
| ALIAS(ES) (if any – separated by a blank space) | [] |
| COMMENT (if any – for the host entry) | [] |

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

6. INTERNET ADDRESS (dotted decimal) is highlighted. (**Note:** Do *not* type any leading zeros when you type the network address. For example, do not type 002.020.120.010. Instead, type 2.20.120.10 as the address.)

Type the address of the diskless client.

7. Move the cursor to HOST NAME. Type the name of the diskless client.
8. Press Enter to save the name and address.
9. Press the F3 key twice to return to the Manage Clients menu.

Now you are ready to add the client to your diskless server. Continue with step 10.

10. Move the cursor to Add a Diskless Client.

Press Enter.

A screen similar to the following displays:

Add a Diskless Client

Type or select value for the entry fields.
Press Enter AFTER making all desired changes.

SPOT name

[Entry Fields]
[] +

F1=Help
F5=Undo
F9=Shell

F2=Refresh
F6=Command
F10=Exit

F3=Cancel
F7=Edit
Enter=Do

F4=List
F8=Image

11. To list the available SPOTs, press F4.

A screen similar to the following displays:

Add a Diskless Client

Type or select value for the entry fields.
Press Enter AFTER making all desired changes.

SPOT name
[Entry Fields]
[] +

SPOT name

Move cursor to desired item and press Enter.

composers
Engineers

F1 = Help
F8=Image
F2 = Refresh
F10=Exit
F3 = Cancel
Enter=Do

12. Move the cursor to the SPOT you want to use and press Enter.

A screen similar to the following displays:

Add a Diskless Client

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* CLIENT name
[Entry Fields]
[]

SPOT name
[composers]

NETWORK HARDWARE type
[1]
+#

* HARDWARE address of client machine
[]

GATEWAY INTERNET (IP) address
[]

NETWORK SUBNETMASK
[]

ROOT parent directory
[/export/root]

HOME parent directory
[/export/home]

DUMP parent directory
[/export/dump]

PAGING parent directory
[/export/swap]

PAGING size in blocks
[65536] #

MICROCODE directory
[/usr/lib/microcode]

[MORE...6]

F1=Help
F5=Undo
F9=Shell
F2=Refresh
F6=Command
F10=Exit
F3=Cancel
F7=Edit
Enter=Do
F4=List
F8=Image

Note: Do not press Enter until you get to step 15.

13. **CLIENT** name is highlighted. Refer to your Adding a Diskless Client worksheet.

Type the hostname of the client you want to add.

Note: If you are not using a nameserver, then it is the same name you just typed when you entered the client's network address in step 7. If you are using a nameserver, type the name the nameserver uses for this client.

14. Use the following procedure for the preceding screen.

Note: Do *not* type any leading zeroes in the gateway and subnet addresses. For example, do not type 002.020.120.010 as the gateway address. Instead, type 2.20.120.10 as the address.

Refer to your Adding a Diskless Client worksheet. Type the information from the worksheet to the following fields on the Add a Diskless Client screen:

- Network hardware type
- Hardware address of client machine
- Gateway address
- Subnetmask
- Paging size in blocks

15. After you have made all the necessary changes, press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | |
|--|------------|------------|------------|
| Command: running | stdout: no | stderr: no | |
| Before command completion, additional instructions may appear below. | | | |
| processing for client "handle" | | | |
| root directory initialization in "/export/root" | | | |
| restoring proto files from | | | |
| "grieg:/export/exec/3.2/usr/proto_root.tar" | | | |
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

It will take several minutes for the client to be added. When the process is finished, the Command: status indicator changes to OK or failed.

If the client was added successfully, continue with step 16.

If the client was *not* added successfully, refer to the troubleshooting section of the *Diskless Management Workstation Guide* and follow the procedures for determining the problem. When you have corrected the problem, return to the beginning of this section and repeat the procedure.

16. Do you need to add another diskless client?

YES: Press F3 twice and return to step 4 on page 10-28.

NO: Press F10 to exit SMIT and continue with step 17.

17. When you were planning your diskless community, you may have decided that your clients do *not* need to use any optional software products; they only need the Base Operating System. If so, remove the tape from the tape drive and go to the section in this chapter titled "Part 4: Starting a Diskless Client for the First Time" on page 10-69. If you do want to install optional software, go to the section in this chapter titled "Part 3: Installing and Updating Optional Software" on page 10-47.

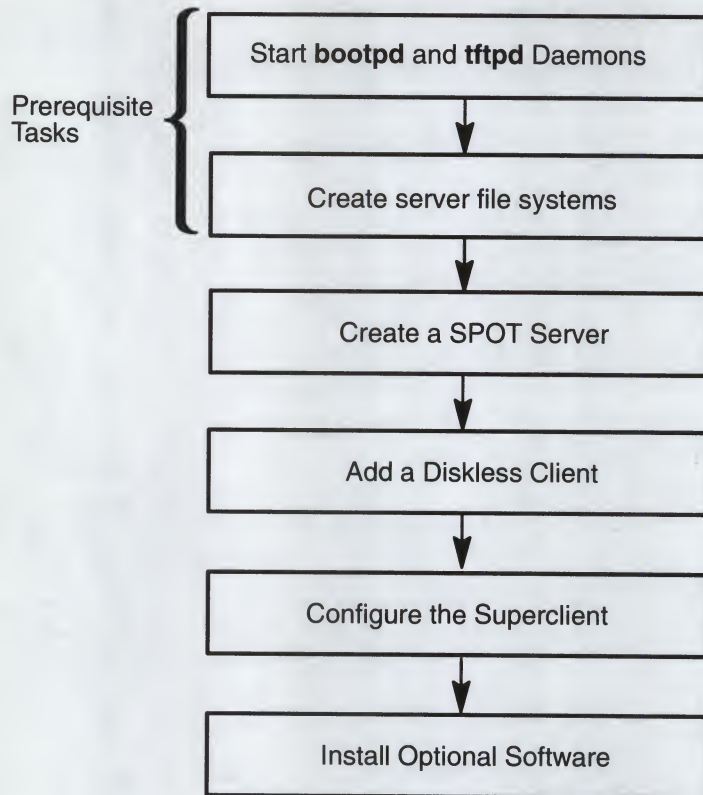
Part 2: Creating a Non-AIX Version 3.2 Diskless Server

This part of Chapter 10 contains the following sections:

- Flow Chart for Creating a Non-AIX Version 3.2 Diskless Server 10-34
- Prerequisite Tasks and Conditions 10-35
- Procedure for Creating a Non-AIX Version 3.2 Diskless Server 10-37

Flow Chart for Creating a Non-AIX Version 3.2 Diskless Server

This flow chart shows the basic steps you must perform to create a diskless server from an installed system.



Prerequisite Tasks and Conditions

The following steps must be completed before you can begin the procedures in this part of Chapter 10:

1. To create a diskless community you must have workstations available that can function as diskless clients. The following POWERstations can be used as diskless clients: Model 7011 Type 220 and Model 7012 Types 340 and 350.
2. The Shared Product Object Tree (SPOT) server must have a tape or CD-ROM device installed that can read the Version 3.2 installation tape or CD-ROM.
3. TCP/IP and NFS must be running on the server. If your server is running Version 3.1.x, you can do the following steps to see if TCP/IP and NFS are running:
 - a. If you are not already logged in as root on your diskless server, log in as root now.
 - b. To see if TCP/IP and NFS are installed, enter the following:

```
lslpp -L bosnet.*
```

If the message `There is no product in ...` is displayed, you will have to install the "Base Operating System Network Facilities (BOSNET)" optional software product. Go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products. Then, return here and continue with the next step.

- c. To see if TCP/IP is configured, enter the following:

```
lssrc -s sendmail
```

If the status of `sendmail` shows inoperative, you must configure TCP/IP. Refer to "Chapter 14. Network Configuration" and follow the procedures for configuring TCP/IP.

- d. To see if NFS is configured, enter the following:

```
lssrc -s lockd
```

If the status of `lockd` shows inoperative, you must configure NFS. Refer to "Chapter 14. Network Configuration" and following the procedures for configuring NFS.

4. All client and server hostnames are known to the network.
5. NFS (Sun/ONC Version 4.0.3 or later) must be running on the server. The following NFS processes are required:
 - **rpc.mountd** daemon
 - **nfsd** daemon
 - **portmap** daemon
 - **rpc.lockd** daemon
 - **rpc.statd** daemon

6. The **tftpd** and **bootpd** daemons must be running on the server. For servers that are not running the Version 3.2 and that do not already have a version of these daemons, source code for these daemons is provided in the Diskless Workstation Management software. However, the files must be built before the daemons can be initialized. For information about how to build the **bootpd** and **tftpd** daemons, refer to the *Diskless Workstation Management Guide and Reference*.
7. For non-AIX servers, make sure that the **/tmp** file system has at least 5MB of free disk space. If your system does not have a **/tmp** file system, make sure the **/** (root) file system has at least 5MB of free disk space.

Procedure for Creating a Non-AIX Version 3.2 Diskless Server

This part of chapter 10 contains instructions for creating a diskless server on a machine that is running Version 3.1.x of the operating system or a non-AIX operating system. This part of chapter 10 contains instructions for the following procedures:

- A. Create a Shared Product Object Tree (SPOT) Server
- B. Increase the Size of a File System
- C. Add a Diskless Client
- D. Configure the Superclient
- E. Install Optional Software

A. Create a Shared Product Object Tree (SPOT) Server

This procedure describes how to create a Shared Product Object Tree (SPOT) server on a non-AIX Version 3.2 system.

| | |
|--------|---|
| CD-ROM | If you are installing from CD-ROM, go to the section titled "Getting the DMW Commands from CD-ROM" on page 10-39. |
| Tape | If you are installing from tape, go to the next section, "Getting the DMW Commands from Tape." |

Getting the DMW Commands from Tape

1. If you are not already logged in as root on your diskless server, log in as root now.
2. Insert the Version 3.2 installation tape into the tape drive.
3. Type the following:

```
cd /
```

and press Enter.

4. Rewind the tape. On a Version 3.1.x system, type the following:

Note: Anytime in this procedure when you are asked to type the name of your tape device, use a device name that does not cause the tape to automatically rewind on close. In Version 3.1, you would add the .1 suffix to the name so that the tape will not rewind.

```
tctl -f /dev/name rewind
```

 (where *name* is the name of your tape device.)

and press Enter.

For example, if your tape device name is `rmt0`, you would type:

```
tctl -f /dev/rmt0.1 rewind
```

and press Enter.

5. If you are *not* using an 8mm tape drive, skip to step 8.
If you are using an 8mm tape drive, continue with step 6.
6. Determine the block size of the tape device.

For example, if you are using a Version 3.1.x system and your tape device name is `rmt0`, you would type:

```
lsattr -E -l rmt0
```

and press Enter.

If the `block_size` is 512, skip to step 8.

If the `block_size` is *not* 512, write down the block size and continue with step 7.

7. Change the block size to 512.

For example, if you are using a Version 3.1.x system and your tape device name is `rmt0`, you would type:

```
chdev -a block_size=512 -l rmt0
```

and press Enter.

8. Position the tape to the BOS installation image (the fourth image on the tape). On a Version 3.1.x system, type the following:

```
tctl -f /dev/name fsf 3
```

 (where *name* is the name [nonrewinding] of your tape device.)

and press Enter.

9. To extract the directory that holds the commands, type the following:

```
tar -xvf /dev/name ./usr/lib/dwm
```

 (where *name* is the name of your tape device.)

and press Enter.

10. Go to the section titled "Making the SPOT" on page 10-40.

Getting the DWM Commands from CD-ROM

1. If you are not already logged in as root on your diskless server, log in as root now.
2. If you are installing from CD-ROM, place the CD-ROM into a disc caddy, and insert the caddy into the CD-ROM drive.

3. To change to the root (/) directory, type the following:

```
cd /
```

 (where there is one space between the `cd` and the slash.)

and press Enter.

4. Take the necessary steps to create a CD-ROM file system and mount it on a directory of your choice on your server.

For example, if you are running a Version 3.1.x system and the name of your CD-ROM device is `cd0`, you would type the following to mount your CD-ROM device onto the `/mnt/cd` directory:

```
mount -o ro -v cdrfs /dev/cd0 /mnt/cd
```

and press Enter.

The CD-ROM file system is then mounted.

5. To extract the directory that holds the Diskless Workstation Management commands, type the following:

```
tar -xvf MountDir/bos.obj ./usr/lib/dwm
```

 (where *MountDir* is the path name of the directory where the CD-ROM device is mounted.)

and press Enter.

6. Go to the next section, "Making the SPOT," on page 10-40.

Making the SPOT

1. Before you can use the commands, you must set your *PATH* environment variable.

If you are using the Bourne (sh) or Korn (ksh) shell, continue with step 2.

If you are using the C-shell (csh), skip to step 3.

2. Perform the following steps to set the *PATH* variable:

- a. Type the following:

```
PATH=$PATH:/usr/lib/dwm
```

and press Enter.

- b. Type the following:

```
export PATH
```

and press Enter.

- c. Continue with step 7.

3. To set the *PATH* variable, type the following:

```
set path = ($path /usr/lib/dwm)
```

and press Enter.

4. For any other servers, you may have to change the following variables in the */usr/lib/dwm/dwm_platform* file to make the Diskless Workstation Management commands work successfully:

- **DEFAULT_device**
- **DEFAULT_tape_prefix**
- **tctl**
- **set_tape_bs**
- **grep**
- **awk**
- **DD_DEV**
- **echo**
- **tar_create**
- **fs_shortdev**
- **ls_size_field**
- **ping**

5. Complete the Creating File Systems Plan (Installing the Operating System) beginning on page 16-18.

Note: If you are using different directories than the ones specified in the Creating File Systems Worksheet (Installing the Operating System), make sure you use the appropriate flags with the **mkspot** command to specify the different directories.

6. Create the file systems to serve your diskless clients. Refer to your Creating File Systems worksheet.

If you are using a Version 3.1.x server, refer to the section titled "Create File Systems to Serve Diskless Clients" on page 10-15 for instructions on how to create these file systems; then return here and continue with step 7.

7. Use the **mkspot** command to put the executable files (the SPOT) into the **/export/exec** directory.

Refer to the *Diskless Workstation Management Guide and Reference* for more information on the **mkspot** command.

For example, if you are using a Version 3.1.x system and you want to create a SPOT named **composers** from the tape device named **rmt0**, you would type:

```
mkspot -f /dev/rmt0.1 -v composers
```

and press Enter.

If you are running a Version 3.1.x system and you want to create a SPOT named **composers** from a CD-ROM file system mounted on the directory **/mnt/cd**, you would type the following:

```
mkspot -f /mnt/cd/bos.obj -v composers
```

and press Enter.

The file named **bos.obj** is a tar image file of the Base Operating System.

8. Go to the next section, "Preparing the Server for Optional Software Installation."

Preparing the Server for Optional Software Installation

1. If one of the machines that you are going to use as a diskless client has a local device that can read the Version 3.2 installation medium, skip this step and go to step 3 on page 10-43.

Otherwise, do one of the following:

CD-ROM If you are installing from CD-ROM, go to step 2 on page 10-42.

Tape If you are installing from tape, continue with this step.

You must copy the optional software images from the installation medium and place them on the server using the **xlpp** command.

To copy the software to your hard drive, do the following:

- a. Insert the Version 3.2 tape into the diskless server's tape drive.
- b. To list the Optional Software Products, type the following:
(where *name* is the [nonrewinding] name of your diskless server's tape device.)

```
xlpp -f /dev/name -l -v
```

and press Enter.

Note: You may wish to redirect the output to a file for easier viewing.

For example, if you are using a Version 3.1.x system and you want to list the table of contents on the tape device named **rmt0** and redirect the output to a file called **/tmp/output.list**, you would type:

```
xlpp -f /dev/rmt0.1 -l -v > /tmp/output.list
```

and press Enter.

- c. Write down the names of the software you want to install from the list you obtained in step b.

- d. To extract the software, type the following:

```
xlpp -f /dev/name -I SPOTNAME SoftwareList
```

(where *name* is the name of your tape device, *SPOTNAME* is the name of your SPOT, and *SoftwareList* is the names of the software you want to install separated by single spaces.)

and press Enter.

For example, if you are using a Version 3.1.x system and you want to extract the following images from the tape device named *rmt0* into a SPOT called *composers*:

| | |
|-----------------------|-----------------------------------|
| X11rte.obj | (AIXwindows Run Time Environment) |
| X11rte.ext.obj | (AIXwindows Run Time Extensions) |
| bosnet.obj | (Network Facilities) |

You would type the following on one line:

```
xlpp -f /dev/rmt0.1 -I composers X11rte.obj X11rte.ext.obj bosnet.obj
```

and press Enter.

- e. Write down the name of the directory that holds the installation images. If you did not specify a directory with the **-I** flag, the default directory used is **/usr/sys/inst.images**.
2. To copy the optional software images from the installation CD-ROM into a directory on your server, do the following:

- a. If your installation CD-ROM is currently mounted, go to step b.
If not, take the necessary steps to create a CD-ROM file system and mount it on a directory of your choice on your server.

For example, if you are running an AIX Version 3.1.x system and the name of your CD-ROM device is *cd0*, you would type the following to mount your CD-ROM device onto the */mnt/cd* directory:

```
mount -o ro -v cdrfs /dev/cd0 /mnt/cd
```

and press Enter.

The CD-ROM file system is then mounted.

- b. To get a list of the optional software products on the CD-ROM, type the following:

```
ls -l MountDir
```

(where *MountDir* is the directory onto which the CD-ROM is mounted.)

Note: The CD-ROM contains a file named **bos.obj** that is a tar image file of BOS. The CD-ROM also contains other files that are the optional software products or updates.

- c. From the list you obtained in step b, write down the file names of the software you want to install.

- d. To copy the software, type the following:

```
cp SoftwareList TargetDir
```

(where *SoftwareList* is a list of the file names of the software on the CD-ROM you want to install and *TargetDir* is the directory on the server to which you want to copy the software images.)

and press Enter.

Warning: Do not copy the hidden table of contents file named `.toc` to the target directory on your server. When you install from your superclient, the installation commands will build a valid table of contents for this directory.

For example, to copy the following images:

```
X11rte.obj
X11rte.ext.obj
bosnet.obj
```

from a CD-ROM mounted on the `/mnt/cd` directory so that they are visible from a superclient of a SPOT on your server called `composers`, you could execute the following commands:

Note: The second command is entered all on one line.

```
cd /mnt/cd
cp X11rte.obj X11rte.ext.obj bosnet.obj
/export/exec/composers/usr/sys/inst.images
```

In this example, the three images are copied to the directory name `/export/exec/composers/usr/sys/inst.images` on the server. This directory is seen as the `/usr/sys/inst.images` directory by a client of the SPOT named `composers`.

3. If you are using an 8mm tape drive *and* you changed the block size to 512, change the tape drive back to its original block size.

For example, if you are using a Version 3.1.x system and your tape device name is `rmt0` and the original block size was 1024, you would type:

```
chdev -a block_size=1024 -l rmt0
```

and press Enter.

If you are using a CD-ROM disc, you can unmount it now.

For example, if you are running a Version 3.1.x operating system and your CD-ROM is mounted on the `/mnt/cd` directory, you would type the following:

```
umount /mnt/cd
```

and press Enter.

4. Go to the next section, "Displaying the Diskless README File."

Displaying the Diskless README File

1. You should now read the diskless README file.
Use the `pg /usr/lpp/bos/README.diskless` command to display this file.
2. You have finished making a non-AIX Version 3.2 diskless server.
Skip to section "C. Add a Diskless Client" on page 10-44.

B. Increase the Size of a File System

The section describes how to calculate the new sizes of the diskless server's file systems. You may have to increase the size of the following file systems: **/export/home**, **/export/root**, and **/export/swap**.

PROCEDURE:

1. To calculate the size needed for increasing the **root** file system, use the formula:
file system size = number of new clients you are adding x 4 x 2048.
2. To calculate the size needed for increasing the **home** file system, use the following formula:
file system size = number of MB per user x number of users on all new clients x 2048.
For example, if you want to allow 1.5MB of hard disk space per user and you have 10 additional users, you would increase the home file system by 30720.
3. To calculate the size needed for increasing the paging file system, use the following formula:
file system size = total number of MB of RAM for all new clients x 2 x 2048.
To find the amount of RAM (memory) that was shipped with the client, refer to the "About Your Machine" document that came with your client.
4. Refer to your system documentation for instructions on how to increase the size of a file system and increase the size of the **home**, **root** and **swap** file systems.

After you have finished increasing the size of your file systems, continue with the next section, "C. Add a Diskless Client."

C. Add a Diskless Client

The section describes how to add a diskless client. Repeat the steps in this section for each of the clients you need to create.

PROCEDURE

1. Use the **mkdclient** command to create a diskless client.

Refer to the *Diskless Workstation Management Guide and Reference* for more information on the **mkdclient** command.

Refer to your Adding a Diskless Client worksheet for the specific values to use when you create each client.

For example, to create a client named **liszt** with 32MB of memory and a Token-Ring network adapter with a hardware address of 10005a21124c using the Version 3.2 SPOT, you would type:

```
mkdclient -a -E composers -A 10005a21124c -N 6 -Z 65536 -v liszt
```

and press Enter.

Note: At least one of the clients you create must be created as a superclient. This is the client that you will use to install the optional software products onto your server. To make a client a superclient, add the flag **-i** to the **mkdclient** command.

2. To confirm that a client was created correctly, type the following:

```
lsdclient -L client_host_name (where client_host_name is the name of  
the client.)
```

and press Enter.

Use the **chdclient** command to make any corrections to the client.

Refer to the *Diskless Workstation Management Guide and Reference* for more information on the **lsdclient** and **chdclient** commands.

Continue with the next section, "D. Configure the Superclient."

D. Configure the Superclient

A superclient workstation must be used to install the optional software.

You must now configure and start your superclient. Go to "Part 4: Starting a Diskless Client for the First Time" on page 10-69 and follow the procedures for starting your superclient. When you are finished with starting your superclient, return here and continue with the next section, "E. Install Optional Software."

E. Install Optional Software

When you used the **mkspot** command in step 7, on page 10-41, the operating system was automatically installed into the SPOT on your server. You then used the **xlpp** command to copy onto your server the installation images of the optional software products. These images are in a compressed format. Before the optional products can be used, they must be installed (expanded).

When you were planning your diskless community, you may have decided that your clients do *not* need to use any optional software products; that they only need the Base Operating System. If so, remove the tape from the tape drive and go to the part in this chapter titled "Part 4: Starting a Diskless Client for the First Time" on page 10-69. If you do want to install optional software, go to the part in this chapter titled "Part 3: Installing and Updating Optional Software" on page 10-47 and follow the procedures for installing optional software with your superclient. When you begin the installation procedures, use the directory name you wrote down in step 1e on page 10-42 to fill out your installation plan.

NOTES

Part 3: Installing Optional Software and Service Updates

During the process of adding a SPOT, the Base Operating System (BOS) was automatically installed into the SPOT. This part of Chapter 10 describes the process of installing optional software products (such as BOS extensions, tools, and programming languages) and service updates (fixes and enhancements to BOS and your optional software products) into the SPOT on your server.

Warning: The installation of optional software and updates on the clients should be performed immediately after installing or updating software on the server. If the client installation is not done immediately, unpredictable results can occur on the client because of inconsistent software between the client's root and the server's **/usr** file system. If a client machine is rebooted before the client software is installed, the machine can hang.

This part of Chapter 10 contains the following sections:

- Prerequisite Tasks and Conditions 10-48
- Procedure for Installing and Updating Optional Software 10-49

Prerequisite Tasks and Conditions

Warning: The installation of optional software or updates on the clients should be performed immediately after installing or updating software on the server. If the client installation is not done immediately, unpredictable results can occur on the client because of inconsistent software between the client's root and the server's **/usr** file system. If a client machine is rebooted before the client software is installed, the machine can hang.

Procedure for Installing and Updating Optional Software

This part of Chapter 10 contains instructions for installing optional software or updates into the SPOT on your server.

To begin this procedure, answer the following question:

Did you create the SPOT using the server's **/usr** file system?

NO: I created the SPOT by installing BOS Version 3.2.x.
Go to "A. Installing and Updating When the SPOT Is Not the Server's /usr File System" on page 10-50.

YES: I created the SPOT using the server's **/usr** file system.

If the SPOT is the server's **/usr** file system, then you must first install the optional software and service updates on the server through the "Standard Installation & Maintenance" menus. If you have already installed the desired software on the server, go to "B. Updating the Client Roots to be Consistent with the SPOT" on page 10-67.

If you have not yet installed the software on the server, go to "Chapter 6. Optional Software Installation" for instructions on how to install optional software and service updates on the server. After completing the installation on the server, go to section "B. Updating the Client Roots to be Consistent with the SPOT" on page 10-67 for instructions on how to complete the installation of the clients of the SPOT.

A. Installing and Updating When the SPOT Is Not the Server's /usr File System

This section describes how to install optional software and service updates on a SPOT and its clients when the SPOT is not the server's **/usr** file system.

1. If necessary, refer to "Chapter 17. Product Information" for descriptions of the software products you are installing or updating. When finished, return to this page and continue with step 2.
2. If your diskless server is running Version 3.2, log into the server as root. You will perform these procedures on your server.

If your diskless server is running Version 3.1.x or any other operating system, log into your superclient machine as root. You will perform these procedures on your superclient.

3. Are you currently accessing InfoExplorer from CD-ROM?

NO: Go to step 4.

YES: If you want to install optional software and service updates from the same CD-ROM drive, you must first perform the following procedures before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language    (where Language is the name  
                                   of the language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the BOS Version 3.2 CD-ROM into a disc caddy, and insert the caddy into the CD-ROM drive.

During the installation, SMIT will create and mount a temporary mount point for the CD-ROM drive.

4. If you are installing from CD-ROM, tapes, or diskettes, insert the media into the appropriate drive.

5. Type the following:

`smit diskless` (or `smit -C diskless` if you are working in AIXwindows.)
and press Enter.

A screen similar to the following displays:

Diskless Workstation Management and Installation

Move cursor to desired item and press Enter.

- Start Daemons on Server
- Shared Product Object Trees (SPOTs)
- Install / Update Software
- List Installed Software
- Verify Correct Software Product Installation
- Verify Consistent Installation Level
- Manage Clients

F1=Help
F9=Shell

F2=Refresh
F10=Exit

F3=Cancel
Enter=Do

F8=Image

6. Select **Install / Update Software**.

A menu screen similar to the following displays:

Install / Update Software

Move cursor to desired item and press Enter.

- Install / Update Selectable Software (Custom Install)
- Install ALL Software on Installation Media
- Copy Software to Hard Disk for Future Installation
- Clean Up After a Failed Installation
- List All Software on Installation Media
- List All Problems Fixed by Software on Installation Media

F1=Help
F5=Undo
F9=Shell

F2=Refresh
F6=Command
F10=Exit

F3=Cancel
F7=Edit
Enter=Do

F4=List
F8=Image

Now go to the next section, "Where Do I Go Next?," to determine the type of installation you want to perform.

Where Do I Go Next?

You can install optional software products and service updates in one of the following ways:

Install All Optional Software and Service Updates:

This is the easiest and quickest way to install *all* of the optional software and *all* of the service updates that exist on the installation media (or directory). You should consider this method if your system has plenty of free disk space and if you are sure that you will require most or all of the optional software and service updates that exist on the installation media.

Warning: If lack of disk space on your system is a concern, you may want to install only those optional software products and service updates that you specifically choose to install. This is especially true if the installation media contains optional software products that you do not require or that use a lot of disk space. Some customers, for example, may not require AIXwindows or InfoExplorer, both of which use significant amounts of hard disk storage space.

If your system disk space is limited or if you do not require all of the optional software products and service updates that exist on the installation media, you should consider installing only selected optional software and service updates.

For instructions on how to install all of the software on the installation media (or directory), go to the section titled "Installing All Optional Software and Service Updates" beginning on page 10-53.

Install Only Selected Optional Software and Service Updates:

This procedure provides you with a way of installing only those optional software products and service updates that you specifically choose to install. For instructions, go to "Installing Only Selected Optional Software and Service Updates" beginning on page 10-57.

Installing All Optional Software and Service Updates

This procedure installs all of the software that exists on the installation media (or in the installation directory). This includes *all* of the optional software products and *all* of the service updates that exist on the installation media.

Warning: If lack of disk space on your system is a concern, you may want to install only those optional software products and service updates that you specifically choose to install. This is especially true if the installation media contains optional software products which you do not require, use a lot of disk space, or contain a number separately-installable product options. If your system disk space is limited or if you do not require all of the software on the installation media, you should consider using the procedure titled "Installing Only Selected Optional Software and Service Updates" beginning on page 10-57.

Note: This method does not install (or reinstall) the Base Operating System (BOS). If BOS is not yet installed on your system, refer to the chapter titled "Determining Your Starting Point" beginning on page 0-1 (immediately following the Table of Contents).

PROCEDURE:

1. From the Install / Update Software menu, select **Install ALL Software on Installation Media**.

A screen similar to the following displays:

Install ALL Software on Installation Media

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name

[Entry Fields]
[] +

F1 = Help
F5 = Undo
F9 = Shell

F2 = Refresh
F6 = Command
F10=Exit

F3 = Cancel
F7=Edit
Enter=Do

F4 = List
F8 = Image

2. Press F4 to generate a list of SPOTS.

A screen similar to the following displays:

Install ALL Software on Installation Media

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name

[Entry Fields]
[] +

SPOT (/usr) name

Move cursor to desired item and press Enter.

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F1 = Help
F8=Image

F2 = Refresh
F10=Exit

F3 = Cancel
Enter=Do

3. Move the cursor the desired SPOT and press Enter.

A screen similar to the following displays:

Install ALL Software on Installation Media

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software

[Entry Fields]
[] +

F1 = Help
F5 = Undo
F9 =Shell

F2 = Refresh
F6 = Command
F10=Exit

F3 = Cancel
F7=Edit
Enter=Do

F4 = List
F8 = Image

4. Press F4 to generate a list of installation devices and directories.

A screen similar to the following displays:

Install ALL Software on Installation Media

Type or select a value for the entry field.

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/rmt1.1 (150 MB 1/4-inch Tape Drive)
/dev/fd0 (Diskette Drive)
/usr/sys/inst.images

| | | |
|-----------|--------------|-----------|
| F1 = Help | F2 = Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

In order to install or update software on a client root, the diskless installation command **instlclient** overmounts certain directories and changes the root to be the client root for execution of the client installation. This means that an already mounted CD-ROM file system is not always accessible to the installation. Therefore, when a mounted CD-ROM file system is selected as the input device, it is first unmounted. Whether the selected CD-ROM device was already mounted, a CD-ROM file system is always created and mounted on a temporary mount point that can be accessed by the installation. After the installation is complete, the CD-ROM file system is mounted with its original mount point as appropriate.

Warning: If any process has its current directory on the CD-ROM file system or has any files open on the file system, the installation will fail when it tries to unmount the CD-ROM file system. You must make sure that the CD-ROM file system is not in use before starting the installation.

5. Move the cursor to highlight the device or directory from which you are installing. For example, if you are installing from a tape drive, you might select `/dev/rmt0.1`. After you have highlighted your choice, press Enter.

A popup similar to the following displays:

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last chance to stop before continuing.

Press Enter to continue.
Press Cancel to return to the application.

| | | |
|-----------|--------------|-------------|
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F8=Image | F10=Exit | Enter=Do |

6. If you are ready to begin installing *all* of the optional software products and *all* of the service updates that exist on the installation media (or directory), press Enter.

Note: If you are *not* ready to begin the installation, press F3 to cancel the operation and return to step 4 on page 10-55.

Where Do I Go Next?

You have just initiated the installation of *all* optional software products and *all* of the service updates and that exist on the installation media (or directory). Go to the section titled "Completing the Installation and Reading the Status Messages" on page 10-64.

Installing Only Selected Optional Software and Service Updates

This procedure provides you with a way of installing only those optional software products and service updates that you choose to install. If lack of disk space on your system is a concern, or if you do not require all of the software on the installation media (or directory), you should use this procedure.

PROCEDURE:

1. From the Install / Update Software menu, select **Install / Update Selectable Software (Custom Install)**.

A screen similar to the following displays:

Install / Update Selectable Software (Custom Install)

Move cursor to desired item and press Enter.

Install Software Products at Latest Available Level
Install Maintenance Levels
Install Enhancements
Install Subsystems (Selective Fixes)
Install From All Available Software Packages

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

Note: For more information about service updates and how you use these menu options to install them, refer to "Introduction to Service Updates" on page 7-2. For more information about optional software products, refer to "Chapter 6. Optional Software Installation."

2. Depending on how the type of installation you are performing, select an option from the Install/Update Selectable Software (Custom Install) menu.

A screen similar to the following displays:

*This Title Changes Depending On the Option You Selected From the
Install / Update Selectable Software (Custom Install) Menu*

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name [Entry Fields]
[] +

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

Note: The titles of the screens in this rest of this procedure vary depending on the option you selected from the Install/Update Selectable Software (Custom Install) menu.

3. Press F4 to generate a list of SPOTS.

A screen similar to the following displays:

*This Title Changes Depending On the Option You Selected From the
Install / Update Selectable Software (Custom Install) Menu*

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name [Entry Fields]
[] +

SPOT (/usr) name

Move cursor to desired item and press Enter.

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| | | |
|-----------|--------------|-------------|
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F8=Image | F10=Exit | Enter=Do |

4. Move the cursor to the desired SPOT and press Enter.

A screen similar to the following displays:

This Title Changes Depending On the Option You Selected From the Install / Update Selectable Software (Custom Install) Menu

Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* INPUT device / directory for software [Entry Fields]
[] +

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

5. Press F4 to generate a list of installation devices and directories.

A screen similar to the following displays:

This Title Changes Depending On the Option You Selected From the Install / Update Selectable Software (Custom Install) Menu

Type or select a value for the entry field.

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/rmt1.1 (150 MB 1/4-inch Tape Drive)
/dev/fd0 (Diskette Drive)
/usr/sys/inst.images

| | | |
|-----------|--------------|-----------|
| F1 = Help | F2 = Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

In order to install or update software on a client root, the diskless installation command **instclient** overmounts certain directories and changes the root to be the client root for execution of the client installation. This means that an already mounted CD-ROM file

system is not always accessible to the installation. Therefore, when a mounted CD-ROM file system is selected as the input device, it is first unmounted. Whether the selected CD-ROM device was already mounted, a CD-ROM file system is always created and mounted on a temporary mount point that can be accessed by the installation. After the installation is complete, the CD-ROM file system is mounted with its original mount point as appropriate.

Warning: If any process has its current directory on the CD-ROM file system or has any files open on the file system, the installation will fail when it tries to unmount the CD-ROM file system. You must make sure that the CD-ROM file system is not in use before starting the installation.

6. Move the cursor to highlight the device or directory from which you are installing. For example, if you are installing from a tape drive, you might select `/dev/rmt0.1`. After you have highlighted your choice, press Enter.

A screen similar to the following displays:

*This Title Changes Depending On the Option You Selected From the
Install / Update Selectable Software (Custom Install) Menu*

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | [Entry Fields] | |
|--|----------------|---|
| * INPUT device / directory for software | /dev/rmt0.1 | |
| * SOFTWARE to install | [ALL] | |
| Automatically install PREREQUISITE software? | yes | + |
| COMMIT software? | yes | + |
| SAVE replaced files? | no | + |
| VERIFY software? | no | + |
| EXTEND file systems if space needed? | yes | + |
| REMOVE input file after installation? | no | + |
| OVERWRITE existing version? | no | + |

F1 = Help

F5 = Undo

F9 = Shell

F2 = Refresh

F6 = Command

F10=Exit

F3 = Cancel

F7=Edit

Enter=Do

F4 = List

F8 = Image

Note: Depending on the type of operation you are performing, some of these options may not appear on your screen, and the default settings may differ.

If you choose the **Install Maintenance Levels** option or the **Install Software Products at Latest Available Level** option, the default setting for the `COMMIT software?` field is `yes`, and the default setting for the `SAVE replaced files?` field is `no`. It is strongly recommended that you commit the maintenance level to receive all fixes issued since the base level release.

7. The `SOFTWARE to install` option is highlighted.

Press F4 to display a list of the software products and service updates that exist on the installation media (or directory). The content of this list depends on which option you selected from the Update/Install Selectable Software (Custom Install) menu.

- If you selected the **Install Software Products at Latest Available Level** option, a list of *only* the software products that exist on the installation media is displayed.
- If you selected the **Install Maintenance Levels** option, a list of *only* the maintenance levels that exist on the installation media is displayed.
- If you selected the **Install Enhancements** option, a list of *only* the enhancements that exist on the installation media is displayed.
- If you selected the **Install Subsystems (Selective Fixes)** option, a list of *only* the subsystem selective fixes that exist on the installation media is displayed.
- If you selected the **Install From All Available Software Packages** option, a list of all of the optional software products, maintenance levels, enhancements, and subsystem selective fixes that exist on the installation media is displayed.

Note: If you are updating from tape, it may take several minutes for the system to display the listing.

8. If you are installing optional software products, refer to your Optional Software Installation Worksheet for the list of optional software products and product options you want to install.

Note: If you have not yet completed this plan, go to "Chapter 16. Planning Your Installation" and complete the "Optional Software Installation Worksheet." Then, return here and continue.

9. Use the Page Up and Page Down keys to scroll through the listing to find the first software product or service update you want to select.

- a. When the software product or service update is highlighted, press F7 to select it. A > (greater than) symbol appears next to it, indicating that it has been selected. You may select as many items as required. To deselect a previously selected item, move the cursor to highlight that item and press F7.
- b. Continue scrolling through the list and selecting those software products and service updates you want to install.

Note: If you exit the list and return to it again, the list will be cleared of all of your previous selections. Your previous selections will be lost and you will have to start over and reselect the products and updates you want to install.

10. When you are sure that your selections are correct, press Enter. The dialog options appear again on your screen as they did in step 6.

Note: Only those options that are relevant to the operation you are performing are displayed on this screen.

The system automatically enters the default values for the remaining options. Read the information in the following table to determine if you want to use the default settings. If you want to change the settings, move the cursor to the field and use the Tab key to toggle `yes` or `no`.

| Entry Field | Yes | No |
|--|--|---|
| Automatically install PREREQUISITE software? | (Default) Automatically installs any software that is a prerequisite for the software products you choose to install. | Does <i>not</i> automatically install software that is a prerequisite for the products you choose to install. If the system encounters a missing prerequisite for a software option, the installation of that option fails and the system lists the required prerequisites. |
| COMMIT software? | (The default setting depends on the install option you choose.) Commits all of the software you choose to install. | Applies all of the software you choose to install, but does not commit it. When software is applied, it becomes the active version of the software. |
| SAVE replaced files? | (The default setting depends on the install option you choose.) Saves existing copies(if any) of the software you are installing until the software is committed. If the installation fails, the cleanup procedure is used to retrieve software. | Does <i>not</i> save existing copies of the software you are installing. In case of a failed installation, the cleanup procedure cannot retrieve software. You must reinstall. This setting preserves disk space on your system. |
| VERIFY software? | Instructs the system to perform a checksum in addition to the basic verification of files. | (Default) Instructs the system <i>not</i> to perform a checksum. Only a basic verification will be done. The checksum process can add a significant amount of time to the installation process. |
| EXTEND file systems if space needed? | (Default) Extends file systems if space is needed to install software. Note: Once a file system is extended, it cannot be contracted. It must be deleted to retrieve space. | Does <i>not</i> extend file systems to meet the space requirements of the software you are installing. |
| REMOVE input file after installation? | (This option is valid only if you are installing from a file or directory on your system. If you are installing from tape, diskette, or network, choose the default, no.) Deletes the installation image files of the software products you are installing after installation is complete. An installation image file contains a copy (in backup format) of the software that you are installing and other files the system uses for installation. If you want to recover hard disk space, choose yes. Note: If Automatically install PREREQUISITE software is set to yes, prerequisite software will also be removed. | (Default) Does <i>not</i> delete the installation image files of the software products that you are installing. |
| OVERWRITE existing version? | Allows the reinstallation of the same release level of a software product that already exists on the system. Note: In order to reinstall software, Automatically install PREREQUISITE software must be set to no. | (Default) Does <i>not</i> allow the reinstallation of the same release level of a software product that already exists on the system. |

11. When you are satisfied with all the settings on this screen, press Enter.

A popup similar to the following displays:

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last chance to stop before continuing.

Press Enter to continue.
Press Cancel to return to the application.

| | | |
|-----------|--------------|-------------|
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F8=Image | F10=Exit | Enter=Do |

Note: If you are *not* ready to begin the installation, press F3 to cancel the operation and return to step 7 on page 10-61. Your previous selections will be lost and you will have to reselect the software products and service updates you want to install.

12. When you are ready to begin the installation, press Enter.

Where Do I Go Next?

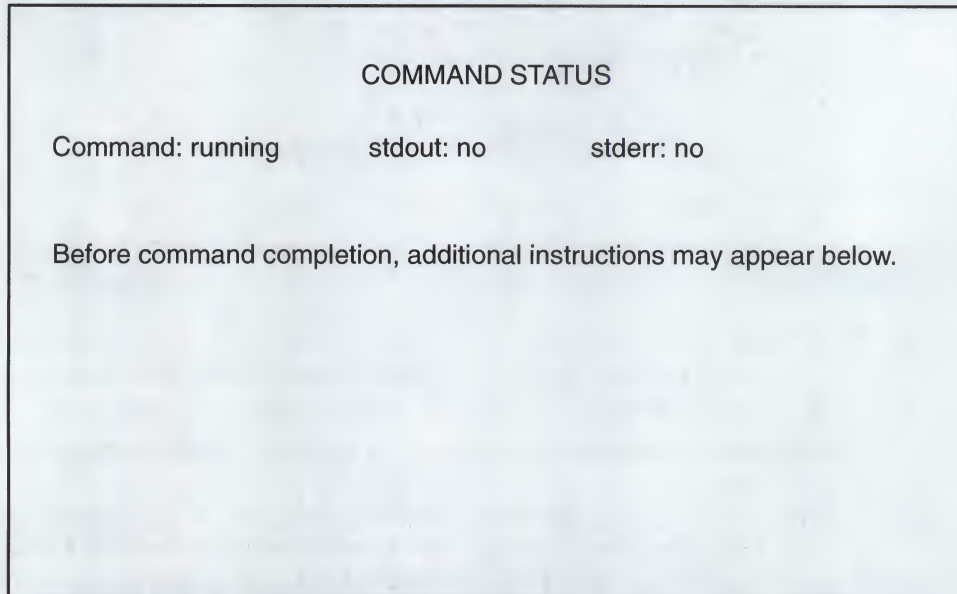
You have just initiated the installation of the software products and service updates you specifically selected. Now go to the next section, "Completing the Service Updates Installation and Reading the Status Messages," and continue.

Completing the Installation and Reading the Status Messages

This procedure describes the steps you should take after you have initiated the installation of the software products (packages) and service updates.

PROCEDURE:

1. After you press Enter to initiate the installation, the screen changes and appears similar to the following:



A series of messages will appear as the installation process proceeds. The amount of time the installation process takes will vary depending on your system and the amount of software you are installing and updating.

Note: During the installation process, the system may prompt you to insert the next tape or diskette by displaying a message similar to the following:

```
Mount volume 2 on /dev/rmt0.
```

```
Press the Enter key to continue.
```

When this message appears, insert the specified tape or diskette into the input device and press Enter.

When the installation process finishes running, the `Command: status` indicator in the upper left corner of the screen will change from `running` to `OK` or `failed`. `OK` means that the installation process ran to completion (even though some options may not have installed successfully). `failed` means that the installation process did not complete.

Note: For a more detailed discussion of the error messages, refer to "Error Messages and Output from the `installp` Command" on page A-6.

2. When the installation process halts or finishes, the screen returns to the top of the list of messages that were generated during installation.
3. Search the message list to find any error messages that may have been produced or any software products or service updates that may not have been successfully installed during the installation process. Use the following function keys to review the system message list:
 - Home displays the start of the message list.
 - End displays the bottom line of text.
 - Page Down displays the next screen of text.
 - Page Up displays the previous screen of text.
 - The Up and Down arrow keys move through the message list line by line.
 - a. Use the message list to determine if there were any problems during installation and which software products or service updates were involved. For example, space limitations may have been exceeded or prerequisites may not have been selected for some of the software that you installed. The system will list how much extra space is needed or what additional software products or service updates must be installed as prerequisites.
 - b. If you have identified a problem with installing a particular software product or service update, you are only required to reinstall the software that was marked FAILED or was missing from the "Installp Summary" report. You should also select any prerequisites that may have been missed the first time. You do not need to reinstall any software products or service updates that were marked SUCCESS in the summary report. If you need to perform the installation again, remove any CD-ROM, tape, or diskette from the drive, press F10 to exit SMIT, and return to step 4 on page 10-50 with the necessary corrections.
 - c. If the installation was interrupted for any reason (for example, a power failure), you may need to use the cleanup procedure before continuing. Press F10 to exit SMIT and refer to the section titled "Cleanup Procedure for Failed Optional Software Installations" on page 21-10.
 - d. When all of your software has been installed successfully, continue with the next step.
4. If you are using diskettes and you have additional software products or service updates to install, do the following:
 - a. Remove the diskette from the diskette drive.
 - b. Insert the diskette containing the software product or service update you want to install into the drive.
 - c. Press F3 to return to the previous screen and continue installing the optional software and service updates from diskette.
5. Press F10 to exit SMIT.
6. If you installed the software from a CD-ROM, tape, or diskette, remove the media from its drive.

The installation and updating of your software is now complete. Refer to the next section, "Where Do I Go Next?," to determine what you need to do next.

Where Do I Go Next?

If you are in the process of creating a new diskless community, continue with the last part of this chapter “Part 4: Starting a Diskless Client for the First Time” on page 10-69.

If you are updating software to a pre-existing diskless community and the documentation that came with the service updates instructs you to reboot the system you are updating, you must reboot all the diskless clients of this SPOT.

If you are installing to a pre-existing diskless community, you are now done with the installation process.

B. Updating the Client Roots to be Consistent with the SPOT

This section describes how to make sure that the software installed in all client roots is consistent with the level of the software installed in the SPOT. This is accomplished by performing the necessary applies, applies/commits, commits, or rejects on each client root in order to make that client consistent with the SPOT.

This section is primarily used to install, commit, or reject optional software and service updates on the clients of a SPOT which is the server's **/usr** file system. In this case, optional software and updates must first be installed, committed, or rejected. Then, you can continue with the update of the client root as described in this section.

Note: An alternate save directory can be specified to store files being replaced by an update. See "Specifying an Alternate Save Directory" in Appendix A for information about restrictions that apply when using an alternate save directory in a diskless environment.

The steps in this section can also be used to make the installed software consistent between a SPOT and its clients when the SPOT is *not* the server's **/usr** file system, and there is a client root that is inconsistent with the SPOT. When the SPOT is not the server's **/usr** file system, it is possible for the installed software to be inconsistent between the SPOT and one or more of its clients if any errors occurred during the installation process that prevented software that was installed in the SPOT from being installed in each of the client roots.

Use the following procedure to ensure that the client roots are consistent with the software installed in the SPOT.

PROCEDURE:

1. Type the following:

```
smit diskless_instupdt_enable (or smit -C diskless_instupdt_enable
                             if you are working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

Finish Incomplete Client Installation

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name

[Entry Fields]
[] +

F1=Help
F5=Undo
F9=Shell

F2=Refresh
F6=Command
F10=Exit

F3=Cancel
F7=Edit
Enter=Do

F4=List
F8=Image

2. Press F4 to generate a list of SPOTS.

A screen similar to the following displays:

Finish Incomplete Client Installation

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name

[Entry Fields]
[] +

SPOT (/usr) name

Move cursor to desired item and press Enter.

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composers

F1 = Help
F8=Image

F2 = Refresh
F10=Exit

F3 = Cancel
Enter=Do

3. Move the cursor to the desired SPOT and press Enter.
4. To finish the installation, press Enter again. The root portion of the software products for all clients will now be updated to be consistent with the SPOT.
5. When the `Command:` status indicator changes to `OK`, press F10 to exit SMIT.

If the installation was successful, you have finished the work necessary to make the optional software products and updates that are installed for each client root consistent with the products and updates installed in the SPOT.

Where Do I Go Next?

If you are in the process of creating a new diskless community, continue with the last part in this chapter "Part 4: Starting a Diskless Client for the First Time" on page 10-69.

If you are updating software to a pre-existing diskless community and the documentation that came with the updates instructs you to reboot the system you are updating, you must reboot all the diskless clients of this SPOT.

If you are installing to a pre-existing diskless community, you are now done with the installation process.

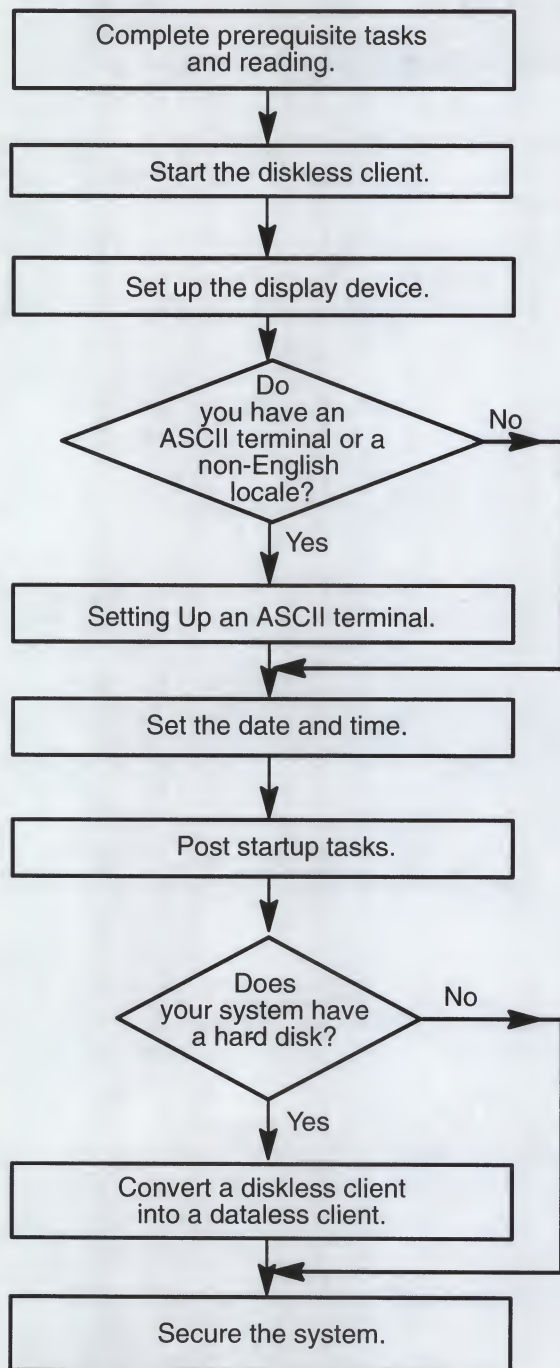
Part 4: Starting a Diskless Client for the First Time

This part of Chapter 10 contains the following sections:

- Flow Chart for Starting a Diskless Client for the First Time 10-70
- Prerequisite Tasks and Conditions 10-71
- Procedure for Starting a Diskless Client for the First Time 10-71

Flow Chart for Starting a Diskless Client for the First Time

The flow chart show the basic steps you must perform to start a diskless client for the first time.



Prerequisite Tasks and Conditions

The following steps must be completed before you can begin the procedures in the following sections:

1. Each diskless client must have been added to the diskless server using the procedures in one of the Creating a Server sections in either “Part 1: Creating a Version 3.2 Diskless Server” on page 10-3 or “Part 2: Creating a Non-AIX Version 3.2 Diskless Server” on page 10-33.
2. All hardware is installed on the diskless client, including any optional devices, such as external tape drives, and all necessary microcode.
3. You should be familiar with the procedures for operating your hardware. If you are not familiar with your hardware, read “Chapter 18. Hardware Basics” and the setup guide that came with your hardware then return here and continue.
4. You need to understand how to use the System Management Interface Tool (SMIT). If you are not familiar with SMIT, you should read “Chapter 19. SMIT Basics” then return here and continue.
5. Locate the key for the key lock on your diskless client’s system unit.
6. Continue with the next section, “Procedure for Starting a Diskless Client for the First Time.”

Procedure for Starting a Diskless Client for the First Time

The following section contains instructions for starting a diskless client for the first time. The procedure in this section should be repeated on each diskless client the first time it is started. This contains instructions for the following procedures:

- A. Start the Diskless Client
- B. Set up the Display Device
- C. Set Up an ASCII Terminal
- D. Set the Date and Time
- E. Post Startup Tasks
- F. Convert a Diskless Client into a Dataless Client
- G. Secure the System

Continue with the next section when you are ready to begin.

A. Start the Diskless Client

1. Set the system unit power switch to the OFF position if it is not already off.
2. Turn the key to the SECURE position. Do not turn on the system unit at this time.
3. Turn on all attached external devices, such as terminals, CD-ROM drives, tape drives, monitors, and external disk drives.

Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order so the system unit can properly identify the attached devices during the startup (boot) process.

4. If you are not using an ASCII terminal, skip to step 5.
If you are using an ASCII terminal, set the terminal's communications options as follows:
 - Line Speed (baud rate) = 9600
 - Word Length (bits per character) = 8
 - Parity = No (None)
 - Number of Stop Bits = 1
 - Interface = RS-232C (or RS-422A)
 - Line Control = IPRTS

It is also recommended that you set the terminal's keyboard and display options as follows:

- Screen = Normal
- Row and Column = 24x80
- Scroll = Jump
- Auto LF (line feed) = Off
- Line Wrap = On
- Forcing Insert = Line (or Both)
- Tab = Field
- Operating Mode = Echo
- Turnaround Character = CR
- Enter = Return
- Return = New Line
- New Line = CR
- Send = Page
- Insert Character = Space

Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the on-screen instructions to set these options. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set these options. Please note that some non-IBM terminals may have different option names and settings than those listed here.

5. If the three-digit LED display on your system unit is covered by a door, open the door so that you can see the display.
6. Set the system unit power switch to the ON position.

7. Wait for 200 to appear in the three-digit LED display.

8. Turn the key to the SERVICE position.

9. Press the yellow RESET button once. After a moment the Main Menu should appear.

10. If the Main Menu appears, skip to step 12.

If it does not appear, continue with the next step.

11. If the numbers 261 and 262 appear in the three-digit LED display and you are using an ASCII terminal, press one of the number keys at the top of the keyboard (*not* on the numeric keypad), and continue with step 12.

If the numbers 261 or 262 do not appear and you are not using an ASCII terminal, consult the *Problem Solving Guide and Reference*.

12. At the Main Menu, type:

1

and press Enter.

Note: Use the Enter or Return key that is above your right Shift key.

The Select BOOT (Startup) Device menu should appear.

13. If you are booting over a Token-Ring network, continue with step 14.

If you are booting over an Ethernet network, skip to step 15.

14. For each Token-Ring adapter, you have two selections: 16 and 4 megabit data rates.

Note: It is very important that you select the correct data rate. An incorrect data rate may cause the total disruption of your network.

a. Enter the number for the selection that corresponds to the adapter and data rate combination that you want to use to communicate with your BOOTP server.

b. Skip to step 19.

15. For each Ethernet adapter, you may have three selections: *thick*, *thin*, and *twisted* cable. Type the number for the type of cable your network is using and press Enter.

If you are starting a POWERstation 7011, continue with step 16.

If you are not starting a POWERstation 7011, skip to step 19.

16. If you are using a *thick* cable, skip to step 18.

If you are using a *thin* or *twisted* cable, continue with step 17.

17. The Type of Transceiver screen should appear.

If you are using an IBM transceiver, type:

1

or, if you are using a non-IBM transceiver, type:

2

and press Enter.

18. The Heartbeat (SQE) Status screen should appear.

If SQE is turned ON, type:

1

or, if SQE is turned OFF, type:

2

and press Enter.

19. The Set Or Change Network Address screen should appear. If you do not need to set or change any addresses, continue with step 20.

To set or change any addresses, do the following:

Note: You must include any leading zeros in the address. For example, if your address is 2.20.120.10, you must enter 002.020.120.010.

a. Type the number in front of the address you want to change and press Enter.

b. Type in the address and press Enter.

c. Repeat steps a and b for each address you need to set or change. When you are finished, continue with step 20.

20. To return to the Main Menu, type:

99

and press Enter.

21. To boot your diskless client, type the number for the selection "Exit Main Menu & Start System (boot)" and press Enter.

22. Turn the key to the NORMAL position and press Enter.

23. As the system begins to boot (which will take awhile), numbers are displayed in the three-digit LED display.

If `c31` appears on the three-digit LED display, each terminal and direct-attached display device attached to your system will show a message asking you to select your system console. Press the specified keys only on the console you want to use as your system console.

Note: NetWare v3.11 can run on a diskless server but not on a diskless client.

If you have NetWare v 3.11 installed on your diskless server, you may see the following error messages on your diskless client when you start it for the first time or execute the **lppchk** command after it is up and running. You can ignore the following error messages:

- 0504-219 The product **netware.server.obj**, package 3.2.x, is not uniformly applied to the system. It is in state COMMITTED in **/usr/lib/objrepos** but in state AVAILABLE in **/etc/objrepos**.
This may cause the system to function incorrectly.
- 0504-218 The product **netware.fs.obj**, package 3.2.x, is not uniformly applied to the system. It is in state COMMITTED in **/usr/lib/objrepos** but in state AVAILABLE in **/etc/objrepos**.
This will probably function properly but should be corrected.
- 0504-218 The product **netware.fs.obj**, package 3.2.x, is not uniformly applied to the system. It is in state APPLIED in **/etc/objrepos** but in state COMMITTED in **/usr/lib/objrepos**.
This will probably function properly but should be corrected.

24. When a login prompt displays on your console, type:

`root`

and press Enter.

25. If you are starting a Model 7011 for the first time, it is recommended that you run the diagnostic programs if you have not already done so. For instructions on how to run the diagnostic programs, refer to the *7011 Customer Setup Guide*. After you have finished running the diagnostic programs, return here and continue with the next section.

Continue with the next section, "B. Set Up the Display Device."

B. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

1. If you are not already logged in as root, do so now.
2. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the type or model number on a plate on the front or back of the display.
3. To see what display name is stored in TERM, type the following:

`echo $TERM` (note that TERM is in capital letters.)

and press Enter.

The system responds with the name of the display the system thinks you are using.

The following are possible responses to the **echo \$TERM** command:

If TERM= dumb

The system was unable to automatically recognize your display. You must manually set the display name. Go to step 4.

If TERM= hft And you *are* using an hft such as a model 5081, 6091, or 8508, then go to the section "D. Set the Date and Time" on page 10-80. If you are not using an hft, go to step 4.

If TERM= a specific model number

Such as `ibm3151` and the number is correct, go to "C. Set Up an ASCII Terminal" on page 10-78. If the number is wrong, go to step 4.

4. Use the following procedures to manually set the TERM name.

- a. If you are using a VT100 terminal, then your TERM name is vt100. Skip to step d. If you are not using a VT100, continue with step b.
- b. Display names must be typed in a specific format. To see the terminfo list of the valid display names, type the following:

```
ls /usr/share/lib/terminfo/x
```

(where x is the first letter [not capitalized] of the name of the manufacturer or type of your display.
For example, if you have an IBM display, you would type
ls/usr/share/lib/terminfo/i,
where i stands for IBM.)

and press Enter.

- c. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether the letters are capitalized. For example, for a model 3151 display, the list will show ibm3151 as the correct display name.
- d. Type the following:

```
export TERM=xxx
```

(where xxx is the exact display name that you copied from the terminfo list.)

and press Enter.

For example, if you are using a 3151, you would type `export TERM=ibm3151` and then press Enter.

5. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 4d every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second "r" are the device name. In this example it is `tty0` (note that the last character in this example is a zero, not the letter "o").

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where xxx is the display name you used in step 4d, zzz is the tty device name you found in step 5a, and the -l in this command is a lowercase "L" and that "term" is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, "C. Set Up an ASCII Terminal."

C. Set Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language) environments.

If you are using an hft such as model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the next section, "D. Set the Date and Time," on page 10-80.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE:

1. To see what locale (language) is stored in the LANG variable, type the following:

```
echo $LANG          (note that LANG is in capital letters.)
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

| | | | |
|-------|----|-------|-----------------|
| C | | | (POSIX) |
| en_GB | or | En_GB | (Great Britain) |
| en_JP | or | En_JP | (Japan) |
| en_US | or | En_US | (United States) |

YES: The system displayed one of the above locales, go to the next section, "D. Set the Date and Time," on page 10-80.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo \$LANG** command a *lowercase* letter?

YES: It is a *lowercase* letter, go to the next section, "D. Set the Date and Time," on page 10-80.

NO: It is an *uppercase* letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Make careful note on whether the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is `ibm3161-C.in`. The corresponding output map file is `ibm3161-C.out`. You would write down `ibm3161-C` for this example.

6. To see what tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` are the numbers identifying your tty device.

7. To set the input and output map files, type the following:

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

(where `-l` is a lower case "L", `x` is the number identifying your tty from step 6, and `mapfile` is the name you wrote down from the `termmap` listing in step 5.)

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with Non-English locales. Continue with the next section, "D. Set the Date and Time."

D. Set the Date and Time

1. Type the following:

date

and press Enter.

The system displays the date and time.

Note: Time on your system is expressed in terms of a 24-hour clock, often called "military time." In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to "E. Post Startup Tasks" on page 10-83.
- To change the date and time, go to step 2.

2. Type the following:

smit chtz (or smit -C chtz if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

Does this time zone go on

DAYLIGHT SAVINGS TIME?

#

1 yes

2 no

| | | |
|----------|------------|-----------|
| F1=Help | F2=Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

3. You have two choices:

- If your time zone uses daylight savings time, move the cursor to *yes* and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to *no* and press Enter.

A screen similar to the following displays:

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

[TOP]

(CUT0GDT) Coordinated Universal Time (CUT)

(TZ 1DT1) Azores; Cape Verde (CUT -1)

(TZ 2DT2) Falkland Islands (CUT -2)

(TZ 3DT3) Greenland; East Brazil (CUT -3)

(AST4ADT) Central Brazil (CUT -4)

(EST5EDT) Eastern U.S.; Columbia (CUT -5)

(CST6CDT) Central U.S.; Honduras (CUT -6)

[MORE...12]

F1=Help

F2=Refresh

F3=Cancel

F8=Image

F10=Exit

Enter=Do

4. Move the cursor to highlight your time zone and press Enter. Use the Up and Down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following displays:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all Desired changes.

Old time zone

Time Zone

Does this time zone go on daylight savings time?

* YEAR (00-99)

* MONTH (01-12)

* DAY (01-31)

* HOUR (00-23)

* MINUTES (00-59)

* SECONDS (00-59)

Entry Fields]

CST6CDT

CT6CDT

yes

[91]

[04]

[15]

[11]

[32]

[05]

F1 = Help

F2 = Refresh

F3 = Cancel

F4 = List

F5 = Undo

F6 = Command

F7=Edit

F8 = Image

F9 =Shell

F10=Exit

Enter=Do

5. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following displays:

| | | | |
|--|-------------|------------|------------|
| COMMAND STATUS | | | |
| Command: OK | stdout: yes | stderr: no | |
| Before completion, additional instructions may appear below | | | |
| Mon Apr 15 11:32:05 CST 1991 | | | |
| Now exit SMIT and log out and then back in so that any changes to date, time, and time zone will be reflected in your current session. | | | |
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

6. Press F10 to exit SMIT.
7. If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Perform the following steps:
 - a. At the system prompt (#), type the following:
`exit`
and press Enter.
The login prompt is displayed.
 - b. To log back into the system, type the following:
`root`
and press Enter.
8. Go to the next section, "E. Post Startup Tasks."

E. Post Startup Tasks

Accessing InfoExplorer

InfoExplorer is your online hypertext information library. It contains thousands of pages of documentation you can read and search from your system display. There are two ways that InfoExplorer can be made available. It can be installed on your diskless server's hard disks, or you can read it from a CD-ROM disc drive. If a CD-ROM disc drive is attached to your client system, go to "Chapter 13. Mounting the InfoExplorer CD-ROM" and follow the procedures for mounting a CD-ROM file system. Then, return here and continue.

Changing Your Language Environment

If you wish to change your language environment or change the code set associated with your environment, consult the following InfoExplorer articles:

- "How to Change Your Locale" in the *System Management Guide*.
- "Understanding Code Set Strategy" in the *Kernel Extensions and Device Support Programming Concepts*.

Configuring Your System for Network Communications

Although you have booted your diskless client over a network, TCP/IP and NFS are not yet configured. You must configure TCP/IP and NFS before you have full network functionality.

If the TCP/IP and NFS software products are not installed, you will have to install the Base Operating System Network Facilities (BOSNET) optional software product. Go to "Part 3: Installing and Updating Optional Software" on page 10-47 and follow the procedures for installing your optional software products. Use the **islpp -L bosnet.*** command to determine if TCP/IP and NFS are installed.

If you want to configure the TCP/IP and NFS software products, go to "Chapter 14. Network Configuration" and follow the instructions for configuring TCP/IP and NFS. Then, return here and continue with the next section.

Verifying Client Access to Server's Resources

There are several server resources that your diskless client uses: optional software products, file systems, and paging space. You can enter the following commands to check these resources:

- **islpp -L** (shows optional program products)
- **mount** (shows file systems)
- **lsps -a** (shows paging space)

Continue with the next section, "Changing root's Password."

Changing root's Password

When choosing a password, choose one you can easily remember, but is difficult for someone else to guess.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
passwd
```


and press Enter.
3. Type the password you want to use for root and press Enter.

4. The system prompts you to enter the password again. Type the password exactly as you typed it in step 3 and press Enter.

Continue with the next section, "Creating Users."

Creating Users

If root is the only user on your system, you should now create a nonroot user name for your everyday use. Using the root login for everyday tasks increases the possibility that you will accidentally corrupt your system due the root user's ability to run system commands. You should create a nonroot account for use when you are performing non-administrative tasks such as running applications. In addition, you should also create user accounts for any other people who want to use the system.

1. To add new user accounts, use the **smit mkuser** command.

- a. Type the following:

```
smit mkuser
```

and press Enter.

The Create User screen should appear.

- b. The **User NAME** field is highlighted. Type the name of the user you want to add and press Enter.

The Command Status screen should appear.

- c. If you want to add another user, press F3 and repeat step b. If you are finished adding new users, press F10 to exit SMIT, and continue with step 2.

2. From the system prompt, type the following to set the new user's password:

```
passwd username (where username is the name of the user created in step 1.)
```

and press Enter.

3. The system will then prompt you to type in a password for the user. Type the password for the user and press Enter.
4. The system prompts you to enter the password again. Type the password exactly as you typed it in step 3 and press Enter.
5. Repeat steps 2 and 4 to set the password for each new user.
6. The user name is now ready for use to login to the system. The first time the username is used the system will prompt the user to select a new password. This is done so that the root administrator will not know the user's password.

Where Do I Go Next?

Do you have a hard disk installed on your client?

NO: Go to section "G. Secure the System" on page 10-86.

YES: Go to the next section, "F. Convert a Diskless Client into a Dataless Client".

F. Convert a Diskless Client into a Dataless Client

This section describes how to convert a diskless client into a dataless client. A diskless client uses the server's hard drives for paging and writing the dump file. A dataless client uses its own hard drive for paging and writing a dump file.

PROCEDURE:

You must have a hard drive installed on your client system to complete this procedure.

1. If the client's system power unit is OFF, turn on all attached devices, turn the key to the NORMAL position and set the system power unit to the ON position.
2. If you are not already logged in as root on the *client* machine, log in as root now.
3. On the *client* machine, type the following:

```
lsdev -Ccdisk
```

and press Enter.

4. On the *client* machine, type the following:

```
mkdataless -v hdiskx
```

 (where *x* is the number of the hard drive you want to use from the list in step 3.)

and press Enter.

Note: Converting a diskless client into a dataless client will take several minutes.

5. On the *client* machine, type the following:

```
shutdown -F
```

and press Enter.

Note: You must wait until the `Halt Completed` message is displayed. It is important that the client machine has successfully halted before you remove the client's paging and dump space on the server.

6. Go to your diskless server. If you are not already logged in as root on the diskless server, log in as root now.
7. On the *server* machine, type the following:

```
rmclient -pv ClientName
```

 (where *ClientName* is the name of the client that you want to convert into a dataless client.)

and press Enter.

8. Go to your client machine. Is the client's system power unit ON?

YES: On the client machine, press the reset button to boot the client.

NO: On the client machine, turn on all attached devices, turn the key to the NORMAL position and set the system power unit to the ON position.

9. After the client machine boots, log in as root.
10. On the *client* machine, type the following to list your paging space:

```
lsp -a
```

and press Enter.

Your client now uses its local hard disk for paging.

You have finished converting a diskless client into a dataless client. Continue with the next section, "G. Secure the System."

G. Secure the System

At this point, you may want to turn your system unit key switch to the SECURE position and remove the key. There are two reasons why you may want to do this:

- When the system unit key switch is in the SECURE position, the reset button is not active and someone cannot accidentally press the reset button and cause a loss of data.
- When the key switch is in the SECURE position, you can prevent someone from rebooting your system and attempting to gain unauthorized access to your system. If you start the system while the key switch is in the SECURE position, the booting process stops and 200 appears in the three-digit LED display. The system does not perform any further operations until the key switch is set to the NORMAL or SERVICE positions.

If you want to prevent accidental resets and make your system more secure, turn your key to the SECURE position and remove it.

You are finished with the procedures in this chapter.

Part II. Supplementary Installation Procedures

CREATING BOS
BOOT DISKETTES

Chapter 11. Creating BOSboot Diskettes

This chapter contains the procedures for creating the BOSboot diskettes – diskettes you may need in order to maintain your AIX Version 3.2 Base Operating System (BOS) after it is installed. The diskettes you create will be version-specific. They will only work with a copy of BOS that is the same version number as the BOS used to create them. To create BOSboot diskettes for an earlier version, refer to the documentation for that version.

Note: *Special Notice for Kanji (Japanese Locale) Users:* You do not need to create the BOSboot diskettes. Kanji systems use the standard National Language Services diskettes to boot and install AIX Version 3.2.

The BOSboot diskettes are as follows:

- Boot diskette – This is used to start (boot) your system from your diskette drive in case your system can no longer boot itself from the hard disk.
- Display diskette – This is used to set up your display device.
- Install/Maintenance diskette – Contains a subset of system commands that are used to install software and solve system problems.
- Display Extensions diskette – This is an additional display diskette that is needed *only* if you have one of the following graphics adapters installed in your system:
 - POWER Gt3 Midrange graphics adapter
 - POWER Gt4 Midrange graphics adapter
 - POWER Gt4x Midrange graphics adapter
 - High Speed 3D Graphics Accelerator
 - Any other IBM graphics adapter

Note: To determine if you have the graphics adapters installed in your system, use the `lsdev -Cs mca` command to check your system hardware list or refer to your “About Your Machine” document.

- Communications Extensions diskette – This is an additional diskette that is needed *only* if you have the Fiber Distributed Data Interface (FDDI) software option (**fddi.obj**) and the FDDI microcode option (**fddi.mc**) installed on your system.

Note: If you will be using the BOSboot diskettes to install software over a FDDI network, you must first install the FDDI software option (**fddi.obj**) and FDDI microcode option (**fddi.mc**) on the system before you create the BOSboot diskettes.

PROCEDURE:

1. Depending on your system, take the following steps to format the number of blank diskettes you will need for your BOSboot diskettes:

Note: These diskettes must have a minimum capacity of 1.44 megabytes.
Diskettes with 1.44-megabyte capacity are referred to as 2-megabyte diskettes.
Diskettes with 2.88-megabyte capacity are referred to as 4-megabyte diskettes.

- a. At the system prompt, type the following:

```
format
```

and press Enter.

Note: If you are formatting these diskettes on a 2.88-megabyte disk drive, the **format** command formats a 4-megabyte diskette by default.
To format a 2-megabyte diskette, enter the following command:

```
format -d /dev/fdx.18 (where x is the number of the 2.88-megabyte  
diskette drive.)
```

- b. When prompted onscreen, insert a blank diskette into the diskette drive and press Enter.
 - c. When the formatting is done the message `Format completed` appears and the system prompt reappears. Remove the diskette.
 - d. Repeat steps a through c until all of the necessary diskettes are formatted. Then continue with the next step.
2. To create the BOS Boot diskette, take the following steps:
 - a. Insert a formatted diskette into your diskette drive.
 - b. Type the following:

```
bosboot -a -d fd0
```

 (The last character in the line is a zero.)
and then press Enter.
 - c. After a minute, system messages appear on the display as the boot diskette is created.
 - d. When the system prompt reappears, remove the diskette from the drive and label it "BOS Boot, Version 3.2." It is very important that you include the version numbers on the labels of these diskettes. These diskettes will only work on a BOS that has the same version number.
 3. To create the BOS Display diskette, take the following steps:
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:

```
mkdispdskt
```


and then press Enter.
 - c. The message `Mount Volume 1 on /dev/rfd0`. Press Enter to Continue appears. Leave the diskette in the drive and press Enter.
 - d. After a minute, system messages appear. When the system prompt reappears, remove the diskette from the drive and label it "BOS Display, Version 3.2."

4. To create the BOS Install/Maintenance diskette and, if necessary, the Communications Extensions diskette, take the following steps:

a. Insert a formatted diskette into the diskette drive.

b. Type the following:

```
mkinstdskt
```

and then press Enter.

c. Depending on whether you are prompted to create a second Install/Maintenance diskette, do one of the following:

- If you are *not* prompted to create a second Install/Maintenance diskette, remove the diskette from the drive and label it "BOS Install/Maintenance, Version 3.2." Skip to step d.
- If you *are* prompted to create a second Install/Maintenance diskette, the following message is displayed:

```
Please mount Volume 2 on /dev/rfd0
```

If this message appears on your screen, do the following:

- Remove the first diskette from the drive and label it "BOS Install/Maintenance, Version 3.2 – Vol. 1."
- Insert another formatted diskette into the diskette drive and press Enter.
- When the second Install/Maintenance diskette is finished, remove it from the drive and label it "BOS Install/Maintenance, Version 3.2 – Vol. 2."

d. Depending on whether you have the FDDI software (**fddi.obj** and **fddi.mc**) installed on your system, do one of the following:

- If you do *not* have the FDDI software installed on your system, skip to step 5.
- If you *do* have the FDDI software installed on your system, the following message is displayed:

```
Insert a Formatted Diskette for the Communications  
Extensions... then press Enter
```

If this message appears on your screen, do the following:

- Insert a formatted diskette into the diskette drive and press Enter.
- When the system prompt reappears, remove the diskette from the drive and label it "BOS Communications Extensions, Version 3.2."

5. If you have a graphics adapter that requires the Display Extensions diskette, take the following steps and create one. If you do *not* need this diskette, go to step 6.
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:

```
mkextdskt
```


and then press Enter.
 - c. The message `Mount Volume 1 on /dev/rfd0. Press Enter to Continue.` appears. Leave the diskette in the drive and press Enter.
 - d. After a minute, system messages appear. When the system prompt reappears, remove the diskette from the drive and label it "BOS Display Extensions, Version 3.2."
6. Write-protect all of the diskettes that you have created by sliding the write-protect tab to the open position.

You have finished creating the BOSboot diskettes.

VIEWING THE
README FILE

Chapter 12. Viewing README Files

This chapter describes how to view the README files. A *README file* is an online reference for late-breaking information about your software products. README files contain information that is not included in other documentation. It is important that you view these files before you begin to use your system.

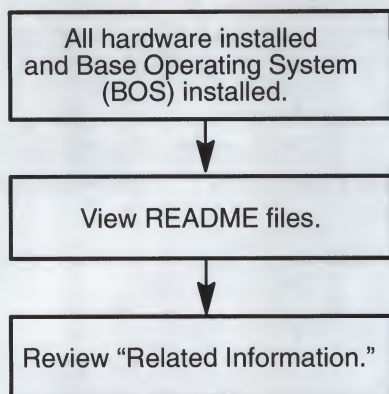
There is a README file for the Version 3.2 Base Operating System (BOS). Each software product may also have its own README file containing information specific to that product that is not included in other documentation.

This chapter contains the following sections:

- Flow Chart for Viewing README Files 12-2
- Prerequisite Tasks and Conditions 12-2
- Procedure for Viewing README Files 12-3
- Related Information 12-4

Flow Chart for Viewing README Files

This flow chart shows the basic steps that will be covered in this chapter.



Prerequisite Tasks and Conditions

1. All hardware must be installed, including all necessary microcode.
2. The Base Operating System (BOS) must be installed.

Procedure for Viewing README Files

Use the following procedure to view the README files for Base Operating System (BOS) software and optional software products.

PROCEDURE:

1. If you are not already logged in as root, log in as root now.
2. At the system prompt (#), type the following:

```
cd /usr/lpp
```

and press Enter.

3. Type the following:

```
ls */*README*
```

and press Enter.

The system lists the README files for each software product installed on your system.

4. Perform the following steps to access and exit specific README files.

- a. To view a README file of a specific software product, type the following:

```
pg xxx/README
```

 (where xxx is the directory name associated with a particular software product.)

and press Enter.

- b. After the copyright screen appears, press Enter.

- c. To scroll through the README file that you have selected, use the following keys or key combinations:

| | |
|--------------|-------------|
| To page down | Press Enter |
|--------------|-------------|

| | |
|------------|--|
| To page up | Press the minus (-) key and press Enter. |
|------------|--|

| | |
|-------------------------|--|
| To move forward x pages | Type the plus (+) key and the number of pages and then press Enter. For example, to move forward five pages, you would type +5 and press Enter. |
|-------------------------|--|

| | |
|--------------------------|--|
| To move backward x pages | Type the minus (-) key and the number of pages and then press Enter. For example, to move backward five pages, you would type -5 and press Enter. |
|--------------------------|--|

- d. To exit the README file, at the colon (:) prompt, type the following:

```
q
```

and press Enter.

Related Information

After your system is installed, you can use InfoExplorer, your online hypertext information library, to learn more about your system. You can step through the InfoExplorer menus or use the search function to locate information such as command names and article titles. You can also look for information in the hardcopy manuals that you may have ordered with your system.

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **pg** command and **ls** command.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

MOUNTING
INFOEXPLORER

Chapter 13. Mounting the InfoExplorer CD-ROM

The InfoExplorer databases are your online hypertext information library. They contain conceptual, procedural, and reference information about your system. The InfoExplorer databases are separately installable options of a software product. They must be installed through SMIT before you can access them.

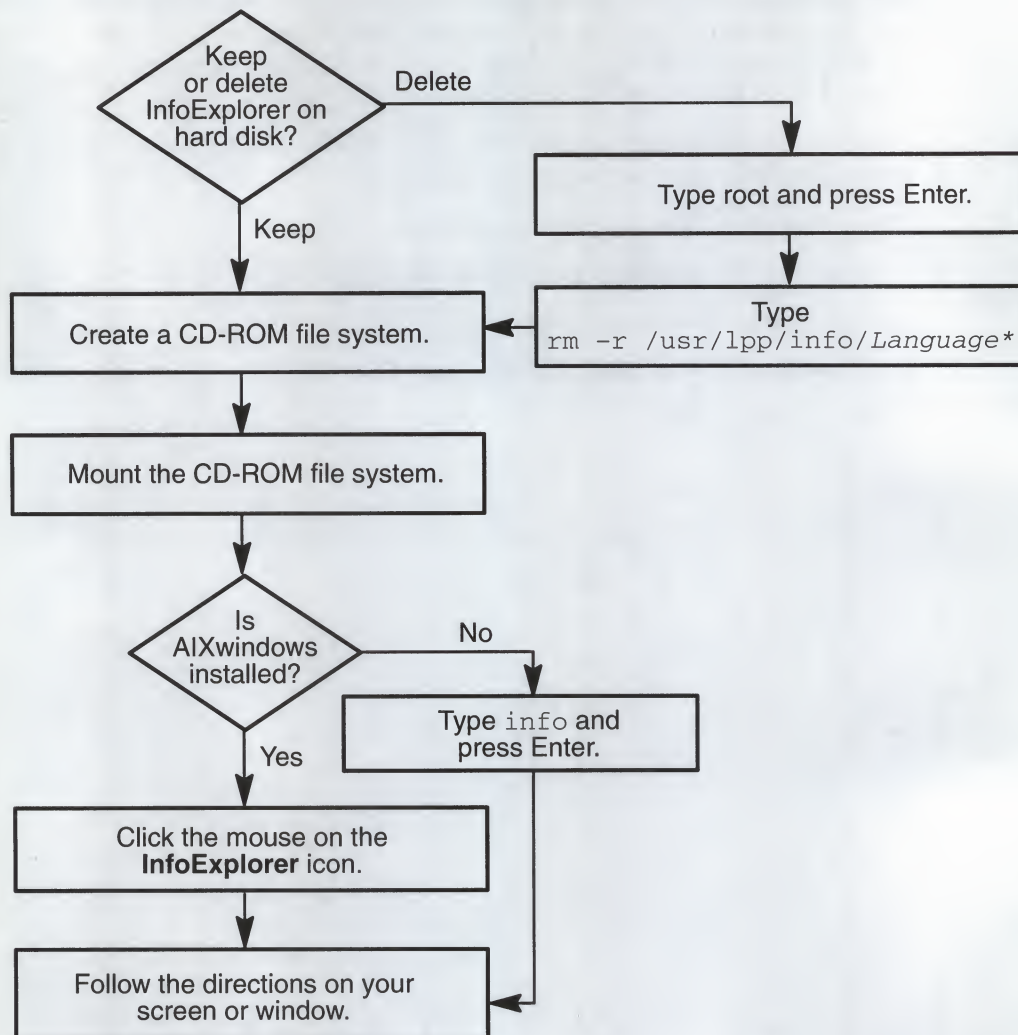
This chapter describes how to access the InfoExplorer databases from your hard disk and from a CD-ROM after your system is installed.

This chapter contains the following sections:

- Flow Chart for Mounting the InfoExplorer CD-ROM 13-2
- Prerequisite Tasks and Conditions 13-3
- Procedure for Mounting the InfoExplorer CD-ROM 13-4
- Related Information 13-12

Flow Chart for Mounting the InfoExplorer CD-ROM

This flow chart outlines the steps to access InfoExplorer from your hard disk or CD-ROM.



* *Language* is the filename of the primary language on your system.

Prerequisite Tasks and Conditions

1. Your Version 3.2 Base Operating System (BOS) is installed.
2. The **bos.data** option for BOS must already be installed.

Note: This option is *not* automatically installed when you install BOS. It must be installed when you install optional software. If you want to see if **bos.data** is already installed on your system, type the following:

```
lslpp -L bos.data
```

If the message `There is no product in ...` is displayed, you will have to install the **bos.data** option. To do this, go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products. Then, return here and continue with the next step.

3. In order to run InfoExplorer in the graphics mode, the AIXwindows Environment must be installed on your system. For more information on how to install the AIXwindows Environment, refer to "Chapter 6. Optional Software Installation."
4. You received the following with your CD-ROM copy of InfoExplorer:
 - Plastic shipping case labeled "CD-ROM Hypertext Information Base Library" containing the following items:
 - CD-ROM disc labeled "Hypertext Information Base Library"
 - CD-ROM instruction booklet.
 - Plastic disc caddy.
5. Read the instruction booklet located in the plastic shipping case containing your CD-ROM Hypertext Information Base Library. The slide-out instruction booklet is also the CD-ROM shipping case label.

Procedure for Mounting the InfoExplorer CD-ROM

This chapter contains the procedures for the following tasks:

- A. Accessing InfoExplorer from Hard Disk.
- B. Accessing InfoExplorer from CD-ROM for the First Time.

A. Accessing InfoExplorer from Hard Disk

This section describes two methods for accessing InfoExplorer from your hard disk, depending upon whether you are running an AIXwindows desktop.

Use the following steps to access InfoExplorer from an AIXwindows desktop:

1. Move the mouse pointer to the icon labeled **InfoExplorer**.
2. Click the left mouse button twice.

The InfoExplorer Welcome window is displayed.

3. Follow the directions in the window.

Use the following steps to access InfoExplorer if you are *not* running an AIXwindows desktop:

1. At the system prompt, type the following:

```
info
```

and press Enter.

The InfoExplorer Welcome window displays.

2. Follow the directions on the screen.

B. Accessing InfoExplorer from CD-ROM the First Time

The first time you access InfoExplorer from your CD-ROM, you must do the following:

- Create a CD-ROM file system.
- Mount the CD-ROM file system.
- Choose whether to keep or delete the InfoExplorer databases on your hard disk.

When these steps are complete, you can access InfoExplorer from your CD-ROM at any time using the procedure in the section titled Accessing the InfoExplorer Databases from CD-ROM on page 13-11.

Creating a CD-ROM File System

This subsection describes how to create a file system to which you can mount your CD-ROM.

Note: Be sure to alter all references to English (United States) and En_US to the appropriate references for your language.

1. If you are using an external CD-ROM drive, be sure the power switch is set to ON.
2. Remove the CD-ROM from the plastic shipping case and place it in the plastic disc caddy.
3. Insert the plastic disc caddy containing the CD-ROM into the disk drive.
4. Create the CD-ROM file system by typing the following:

```
smit crcdrfs
```

and press Enter.

A screen similar to the following displays:

Add a CD-ROM File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | [Entry Fields] |
|--|----------------|
| * DEVICE name | + |
| * MOUNT POINT | [] + |
| Mount AUTOMATICALLY at system restart? | no + |

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

5. Press F4 to list all available devices. A screen similar to the following displays:

Add a CD-ROM File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* DEVICE name

* MOUNT POINT

[Entry Fields]
+
[]
+

DEVICE name

Move cursor to desired item and press Enter.

cd0

F1=Help

F2=Refresh

F3=Cancel

F8=Image

F10=Exit

Enter=Do

6. Move the cursor to highlight the CD-ROM device you plan to use and press Enter.

7. Move the cursor to the `MOUNT POINT` entry field.

8. Type the following:

`/usr/lpp/info/Language` (where *Language* is the name of the language you are using.)

Do not press Enter.

For example, if you want to use English (United States), you would type the following:

`/usr/lpp/info/En_US`

9. Move the cursor to `Mount AUTOMATICALLY at system restart?`

You have two choices:

- To mount InfoExplorer every time you start the system, press the Tab key to change the answer to `yes`.
- To mount manually when you need InfoExplorer, leave the entry field set to `no`, the default value.

10. When you have finished making *all* changes to all the entry fields, press Enter.

The `/etc/filesystems` file now contains the CD-ROM entry for InfoExplorer.

11. Press F10 to exit SMIT.

12. Go to the next section, "Mounting the CD-ROM File System."

Mounting the CD-ROM File System

This section describes how to mount your CD-ROM to the file system you just created.

Note: Be sure to alter all references to English (United States) and En_US to the appropriate references for your language.

1. At the system prompt, type the following:

```
smit mountfs
```

and press Enter.

A screen similar to the following displays:

| Mount a File System | | | |
|---|------------|----------------|----------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| | | [Entry Fields] | |
| * FILESYSTEM name | [] | | + |
| DIRECTORY over which to mount | [] | | + |
| TYPE of file system | | | |
| FORCE the mount? | no | | + |
| REMOTE NODE containing the file system to mount | [] | | + |
| Mount as a REMOVABLE file system? | no | | + |
| Mount as a READ ONLY file system? | no | | + |
| | | | |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

Note: Since the system always mounts InfoExplorer as a read-only file system, you can enter either yes or no in the Mount as READ ONLY file system field.

2. The cursor is now located in the `FILESYSTEM` name entry field.

Press F4 to list file system names.

A screen similar to the following displays:

Mount a File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | [Entry Fields] | |
|-------------------------------|----------------|---|
| * FILESYSTEM name | [] | + |
| DIRECTORY over which to mount | [] | + |
| TYPE of file system | | |

FILE SYSTEM name

Move cursor to desired item and press Enter.

| | | |
|-----------------|---------------------|-------|
| /dev/hd7 | /mnt | jfs |
| /usr/bin/blv.fs | /usr/bin/blv.fs | jfs |
| /dev/cd0 | /usr/lpp/info/En_US | cdrfs |

| | | |
|----------|------------|-----------|
| F1=Help | F2=Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

3. Move the cursor to highlight a line similar to the following:

```
/dev/cdx /usr/lpp/info/Language cdrfs
```

(where *x* is the number of your CD-ROM drive and *Language* is the name of the language you are using.)

For example, if your primary language is English (United States), you would select the following line:

```
/dev/cd0 /usr/lpp/info/En_US cdrfs
```

and press Enter.

4. To begin the CD-ROM mount process, press Enter.
5. When the command status field says OK, press F10 to exit SMIT.
6. Type the following:

```
cd /usr/share/info/data
```

and press Enter.

7. Type the following:

```
cp ispaths.full ispaths
```

and press Enter.

The `/usr/lpp/info/Language` file is now mounted and the InfoExplorer databases are available.

8. Go to the next section, "Deleting InfoExplorer from Your Hard Disk."

Deleting InfoExplorer from Your Hard Disk

During installation, the InfoExplorer databases may have been stored on your hard disk. You can keep this copy of InfoExplorer databases in case your CD-ROM becomes inaccessible at some time, or you can delete it.

If you want to delete the InfoExplorer Databases from your hard disk, perform the following steps:

1. At a system prompt, type the following:

```
smit umountfs
```

and press Enter.

A screen similar to the following displays:

Unmount a File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | | |
|---|----------------------|---|
| Unmount ALL mounted file systems? (except /, /tmp, /usr) | [Entry Fields] no | + |
| -OR- | | |
| Unmount REMOTELY mounted file systems? | no | + |
| NAME of file system to unmount | [] | |
| REMOTE NODE containing the file system(s) to unmount | [] | + |

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

2. Move the cursor to NAME of file system to unmount, and press F4.

A screen similar to the following displays:

Unmount a File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | | |
|---|----------------------|---|
| Unmount ALL mounted file systems? (except /, /tmp, /usr) | [Entry Fields] no | + |
| -OR- | | |

NAME of file system to unmount

Move cursor to desired item and press Enter.

/

/usr

/var

/tmp

/home

/usr/lpp/info/En_US

| | | |
|----------|------------|-----------|
| F1=Help | F2=Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

3. Move the cursor to `/usr/lpp/info/Language`, where *Language* is the name of the language that you are using, and press Enter.
4. To unmount the file system, press Enter again.
5. Do one of the following:
 - If the Command Status screen indicates that the operation was *not* successful, press F10 to exit SMIT and go to step 6.
 - If the Command Status screen indicates that the operation was successful, press F10 to exit SMIT and skip to step 7.
6. If the unmount operation failed, type the following on the command line:

```
umount /usr/lpp/info/Language
```

 (where *Language* is the name of the language that you are using.)
7. To remove the InfoExplorer databases, type the following:

```
rm -r /usr/lpp/info/Language/*
```

 (where *Language* is the name of the language you are using.)
8. Go to the next section, "Accessing the InfoExplorer Databases from CD-ROM."

Accessing the InfoExplorer Databases from CD-ROM

This section describes two methods for starting the InfoExplorer databases from your CD-ROM, depending upon whether or not an AIXwindows desktop is running.

To access the InfoExplorer from an AIXwindows desktop:

1. Be sure that your CD-ROM is mounted and the disc caddy is in the drive.
2. Move the mouse pointer to the icon labeled **InfoExplorer**.
3. Click the left mouse button twice.

The InfoExplorer Welcome window is displayed.

4. Follow the directions in the window.

To access the InfoExplorer when an AIXwindows desktop is *not* running:

1. Be sure that your CD-ROM is mounted and the disc caddy is in the drive.
2. At the system prompt, type the following:

```
info
```

and press Enter.

The InfoExplorer Welcome window is displayed.

3. Follow the directions on the screen.

Warning: If the CD-ROM disc is ejected from the CD-ROM drive for any reason while it is still mounted, the mount connection is broken and you can no longer use InfoExplorer. When you reinsert the InfoExplorer CD-ROM disc, you must use the following procedure to re-access the CD-ROM.

- a. First, you must unmount the broken mount to the CD-ROM file system.

Type the following:

```
umount /usr/lpp/info/Language (where Language is the name of the  
language that you are using.)
```

- b. and press Enter.

4. Now that the broken connection is removed, go back to "Mounting the CD-ROM File System" and repeat the procedure.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

NETWORK
CONFIGURATION

Chapter 14. Network Configuration

This chapter describes how to configure your Transmission Control Protocol/Internet Protocol (TCP/IP) and Network File System (NFS) software so that your system can communicate over a network. If you are using a different protocol for network communications, refer to the documentation for that protocol to configure your system.

This chapter contains the following sections:

- Configuring TCP/IP 14-2
- Configuring NFS 14-10
- Configuring an NFS Server 14-13
- Configuring an NFS Client 14-15
- Related Information 14-18

Configuring TCP/IP

If you installed the TCP/IP and NFS software, you can configure your system to communicate over a network. This section describes how to use SMIT to configure TCP/IP after it is installed.

This procedure is only intended to be used *once* for startup. If you need to change the TCP/IP configuration, use the TCP/IP Further Configuration menu in SMIT.

A. Prerequisite Tasks and Conditions

1. The Version 3.2 Base Operating System is installed.
2. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
3. The TCP/IP software must be installed. If you need to install this software, you will have to install the "Base Operating System Network Facilities (BOSNET)" optional software product. Go to "Chapter 6. Optional Software Installation" and following the procedures, for installing optional software products. Then, return here and continue with the next step.
4. The TCP/IP plan must have been completed. If it is not, go to "Chapter 16. Planning Your Installation" and complete the TCP/IP plan. Then, return here and continue with the next section, "B. Configuring TCP/IP."

B. Configuring TCP/IP

PROCEDURE:

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit tcpip          (or smit -C tcpip if you are working in AIXwindows.)
```

and press Enter.

A screen similar to the following displays:

| | | | |
|--|------------|-----------|----------|
| TCP/IP | | | |
| Move cursor to desired item and press Enter. | | | |
| Minimum Configuration & Startup | | | |
| Further Configuration | | | |
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Minimum Configuration & Startup is highlighted. Press Enter to select it.

A screen similar to the following displays:

TCP/IP

Minimum Configuration & Startup
Further Configuration

Available Network Interfaces

Move cursor to desired item and press Enter.

| | |
|-----|------------------------------|
| en0 | Ethernet Network Interface |
| et0 | IEEE 802.3 Network Interface |
| tr0 | Token-Ring Network Interface |

| | | |
|----------|------------|-----------|
| F1=Help | F2=Refresh | F3=Cancel |
| F8=Image | F10=Exit | Enter=Do |

This is a list of the available network interfaces that your system can use for network communications.

Note: The content of this list varies according to what is installed on your system.

4. Move the cursor to highlight the type of interface you are using for network communications and press Enter.

The Minimum Configuration & Startup screen will appear. The exact contents of this screen will depend on the type of network adapter you selected. For example, if you selected the Token-Ring Network Interface, a screen similar to the following displays:

Minimum Configuration & Startup

To delete existing configuration data, please use Further Configuration menus.

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|-----------------------------------|------------------|
| HOSTNAME | [Entry Fields] |
| Internet ADDRESS (dotted decimal) | [fiat] |
| Network MASK (dotted decimal) | [192.100.165.23] |
| Network INTERFACE | [255.255.255.0] |
| NAMESERVER | tr0 |
| Internet ADDRESS (dotted decimal) | [129.35.33.2] |
| Domain Name | [boston.rts.com] |
| Default GATEWAY Address | [192.152.143.91] |
| (dotted decimal or symbolic name) | |
| RING Speed | 4 |
| START TCP/IP daemons Now | no |

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

Note: Do not press Enter until you get to step 11 on page 14-5.

5. Use the following procedures for all versions of the Minimum Configuration & Startup screen.

Note: Do *not* type any leading zeros in the addresses. For example, do not type 002.020.120.010. Instead, type 2.20.120.10.

Refer to your TCP/IP worksheet. Type the information from the worksheet to the following fields on the Minimum Configuration & Startup screen:

- Hostname
- Internet address
- Network mask
- Nameserver Internet address (if you have one)
- Domain name
- Default gateway address (if you have one).

Note: Depending on your network configuration, you may not need to complete all of the entries on this screen.

6. Move the cursor to `START TCP/IP daemons Now`. Press the Tab key to change the default to `yes`.

7. You have two choices:

- If you are using an Ethernet Network Interface, continue with step 8.
- If you are using the Token-Ring Network Interface, skip to step 9.

8. If you need to change the setting for the type of cable you are using, move the cursor to `Your CABLE Type`.

Press the Tab key to alternate between `N/A`, `bnc`, and `dix`. Skip to step 10.

Note: On some computers, such as the model 220, the Ethernet connection is built into the computer itself. If this is the case with your computer, make sure that the `Your Cable Type` field is set to `N/A` (for not applicable).

9. If you need to change the `RING speed` setting, move the cursor to `RING Speed`. Press the Tab key to alternate between the values 4 and 16.

10. When you have finished making *all* your entries on this screen, confirm that the names and addresses are accurate.

- If you need to make corrections to your entries, use the Up and Down cursor keys to move to the entry you need to correct and type over the old entry.
- If your entries are correct, continue with step 11 on page 14-5.

11. To start the TCP/IP configuration process, press Enter.

A screen similar to the following displays:

```
COMMAND STATUS
Command: OK          stdout: yes          stderr: no
Before completion, additional instructions may appear below

tr0
fiat
inet0 changed
tok0 changed
The attribute 'ring-speed' is now changed to '4,' and this will be effective in
next reboot
tr0 changed
inet0 changed
Checking for srcmstr active ... complete
Starting tcpip daemons:
0513-059 The syslogd Subsystem has been started. Subsystem PID is 6027
0513-059 The sendmail Subsystem has been started. Subsystem PID is 4080
0513-059 The inetd Subsystem has been started. Subsystem PID is 5020
0513-059 The snmpd Subsystem has been started. Subsystem PID is 8822

F1 = Help      F2 = Refresh      F3 = Cancel      F6 = Command
F8 = Image     F9=Shell          F10=Exit
```

12. You have two choices:

- If TCP/IP started successfully, skip to step 14.
- If TCP/IP did *not* start successfully, continue with step 13.

13. Read the system messages on the Command Status screen to determine if any errors occurred.

- a. If any errors occurred, press F3 to return to the Minimum Configuration & Startup menu.
- b. Repeat steps 5 through 12 on page 14-4.
Make your corrections to the values that you entered previously.

14. Press F10 to exit SMIT.

TCP/IP is now ready to use. Continue with the next section, "C. Update the Hosts List."

C. Update the Hosts List

A *nameserver* is a machine on your network that stores the names and addresses of all the network machines. The names are stored in a Hosts List. When one machine wants to communicate with another, it sends that machine's name to the nameserver. The nameserver refers to the Hosts List and responds with the address of the machine name requested. Having a nameserver is an advantage because the Hosts List is stored and updated at one location, but is accessible to all machines on the network. This saves time and storage space.

- If you are using a nameserver for network communications, you do not need to perform this procedure. You have finished configuring TCP/IP. Go to "Configuring NFS" on page 14-10 if you want to configure NFS.
- If you are *not* using a nameserver for network communications, you must update the hosts list to include the names of the systems on the network.

Use the following procedure to set up hostnames for each of the hosts with which you want to communicate.

PROCEDURE:

1. Be sure you have logged in as root.
2. Type the following:

`smit hostent` (or `smit -C hostent` if you are working in AIXwindows.)
and press Enter.

A screen similar to the following displays:

Hosts Table (/etc/hosts)

Move cursor to desired item and press Enter.

List All Hosts
Add a Host
Change / Show Characteristics of a Host
Remove a Host

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Move the cursor to `Add a Host` and press Enter.

A screen similar to the following displays:

Add a Host Name

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

| | |
|---|----------------|
| * INTERNET ADDRESS (dotted decimal) | [Entry Fields] |
| * HOST NAME | [] |
| ALIAS(ES) (if any – separated by a blank space) | [] |
| COMMENT (if any – for the host entry) | [] |

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

Note: Do *not* press Enter until you get to step 5 on page 14-8.

4. Use the following procedure for the Add a Host Name screen.

Note: Do *not* type any leading zeros in the addresses. For example, do not type 002.020.120.010. Instead, type 2.20.120.10 as the address.

Refer to your TCP/IP worksheet. Type the information from the worksheet to the following fields on the `Add a Host Name` screen:

- Internet address
- Host name
- Alias(es) (this is an optional field)
- Comment (this is an optional field).

5. When you have finished making *all* of the entries on this menu, do the following:

a. Press Enter.

A screen similar to the following displays:

| | | | |
|---|--------------|-------------|--------------|
| COMMAND STATUS | | | |
| Command: OK | stdout: yes | stderr: no | |
| Before completion, additional instructions may appear below | | | |
| | | | |
| F1 = Help | F2 = Refresh | F3 = Cancel | F6 = Command |
| F8 = Image | F9=Shell | F10=Exit | |

b. Press F3 to return to the Add a Host Name screen.

- If you have no other host names to add, continue with step 6.
- If you have additional host names to add, repeat steps 4 and 5. Then continue with step 6.

6. Press F3 to return to the Hosts Table (/etc/hosts) menu.

7. Move the cursor to `List All Hosts` and press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | |
|---|--------------|-------------|
| Command: OK | stdout: yes | stderr: no |
| Before completion, additional instructions may appear below | | |
| 129.35.17.93 | olga | olga |
| 129.42.25.84 | swen | swen |
| 129.29.32.76 | greta | greta |
| | | |
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F8 = Image | F9=Shell | F10=Exit |
| F6 = Command | | |

The list displays the following information about all of the machines that your server can communicate with over the network:

- Internet address
 - Host name
 - Aliases
 - Comments.
8. Confirm that the name and address you entered is correct.
- If the list is correct, go to step 9.
 - If you need to correct the list, press F3 and go back to step 3 on page 14-7.
9. Press F10 to exit SMIT.

If you want to configure NFS, go to the next section, "Configuring NFS ," on page 14-10.

Configuring NFS

The following procedure describes how to configure NFS.

A. Prerequisite Tasks and Conditions

1. The Version 3.2 Base Operating System is installed.
2. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
3. The TCP/IP and NFS software must be installed. If you need to install this software, you will have to install the Base Operating System Network Facilities (BOSNET) optional software product. Go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products. Then, return here and continue the next step
4. The TCP/IP software must have been configured. If you need to configure this software, go to "Configuring TCP/IP" on page 14-2. Then, return here and continue with the next section, "B. Configuring NFS."

B. Configuring NFS

For more information on NFS, use the F1 key in SMIT for online help and search in InfoExplorer for "Network File System (NFS) Overview for System Management."

PROCEDURE

1. Be sure you have logged in as `root`.
2. Type the following:

`smit nfs` (or `smit -C nfs` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| | | | |
|--|------------|-----------|----------|
| NFS | | | |
| Move cursor to desired item and press Enter. | | | |
| Configure TCP/IP (If Not Already Configured) | | | |
| Network File System (NFS) | | | |
| Network Information Services (NIS) | | | |
| Configure Secure NFS & NIS | | | |
| Highly Available NFS (HANFS) | | | |
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

3. Move the cursor to `Network File System (NFS)` and press Enter.

A screen similar to the following displays:

NFS

Move cursor to desired item and press Enter.

Configure NFS on This System
Add a Directory to Exports List
Change/Show Attributes of an Exported Directory
Remove a Directory from Exports List
Add a File System for Mounting
Change/Show Attributes of a Mounted File System
Remove a Mounted File System

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

4. `Configure NFS on This System` is highlighted. Press Enter to select it.

A screen similar to the following displays:

Configure NFS on This System

Move cursor to desired item and press Enter.

Start NFS
Stop NFS
Change Number of nfsd & biod Daemons
Start Automounter
Stop Automounter

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

5. Start NFS is highlighted. Press Enter to select it.

A screen similar to the following displays:

Start NFS

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* Start NFS now, on system restart or both

[Entry Fields]
[both]

+

F1=Help
F5=Undo
F9=Shell

F2=Refresh
F6=Command
F10=Exit

F3=Cancel
F7=Edit
Enter=Do

F4=List
F8=Image

6. To start NFS, press Enter.

A screen similar to the following displays:

COMMAND STATUS

Command: OK stdout: yes stderr: no

Before completion, additional instructions may appear below

0513-059 The portmap Subsystem has been started. Subsystem PID is 4890.
starting nfs services:
0513-059 The biod Subsystem has been started. Subsystem PID is 6946.
0513-059 The rpc.statd Subsystem has been started. Subsystem PID is 8233.

F1 = Help
F8 = Image

F2 = Refresh
F9=Shell

F3 = Cancel
F10=Exit

F6 = Command

7. Press F10 to exit SMIT.

8. You have finished configuring NFS.

- If the machine on which you configured NFS is a file server, go to "Configuring an NFS Server" on page 14-13 and follow the instructions for configuring a NFS server.
- If the machine on which you configured NFS is a client, go to "Configuring a NFS Client" on page 22 and follow the instructions for configuring an NFS client.

Configuring an NFS Server

The following procedure describes how to configure an NFS server.

A. Prerequisite Tasks and Conditions

1. The Version 3.2 Base Operating System is installed.
2. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
3. The TCP/IP software must be installed. If you need to install this software, you will have to install the Base Operating System Network Facilities (BOSNET) optional software product. Go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products. Then, return here and continue with the next step.
4. The TCP/IP and NFS software must have been configured. If you need to configure this software, go to "Configuring TCP/IP" on page 14-2 and "Configuring NFS" on page 14-10. Then, return here and continue with the next section, "B. Exporting a Directory within a File System."

B. Exporting a Directory within a File System

The following procedure describes how to export a directory within a file system from a server so that clients can mount it through NFS.

For more information on NFS, refer to the "Network File System (NFS) Overview for System Management" in *Communication Concepts and Procedures*.

PROCEDURE:

1. Be sure you have logged in as root on the server machine.
2. On the server machine, type the following:

```
smit mknfsexp          (or smit -C mknfsexp if you are working in AIXwindows.)  
and press Enter.
```

A screen similar to the following displays:

| Add a Directory to Exports List | | | |
|---|------------|-----------|----------------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | | |
| | | | [Entry Fields] |
| PATHNAME of directory to export | | | [] |
| * MODE to export directory | | | read-write |
| * HOSTNAME list. If exported read-mostly | | | [] |
| Anonymous UID | | | -2 |
| HOSTS allowed root access | | | [] |
| HOSTS & NETGROUPS allowed client access | | | [] |
| Use SECURE option? | | | no |
| EXPORT directory now, system restart or both | | | both |
| * PATHNAME of Exports file if using HANFS | | | |
| F1=Help | F2=Refresh | F3=Cancel | F4=List |
| F5=Undo | F6=Command | F7=Edit | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

Note: Do not press Enter until you get to step 5.

3. `PATHNAME` of directory to export is highlighted.
Type the name of the directory you want to export.
4. You can use the default values for the remaining entries or change the values depending on your network configuration.
5. After you have finished making your entries, press Enter.

A screen similar to the following displays:

COMMAND STATUS

Command: OK stdout: yes stderr: no
Before completion, additional instructions may appear below

`/inst.images`
exported `/inst.images`

| | | | |
|----------|------------|-----------|------------|
| F1=Help | F2=Refresh | F3=Cancel | F6=Command |
| F8=Image | F9=Shell | F10=Exit | |

6. When the `Command:` status indicator changes to `OK`, press F10 to exit SMIT.

The directory within a file system is now exported and can be mounted through NFS by client machines.

Configuring an NFS Client

The following procedure describes how to configure an NFS client.

A. Prerequisite Tasks and Conditions

1. The Version 3.2 Base Operating System is installed.
2. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
3. The TCP/IP and NFS software must be installed. If you need to install this software, you will have to install the Base Operating System Network Facilities (BOSNET) optional software product. Go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products. Then, return here and continue with the next step.
4. The TCP/IP and NFS software must have been configured. If you need to configure this software, go to "Configuring TCP/IP" on page 14-2 and "Configuring NFS" on page 14-10. Then, return here and continue with the next step.
5. The NFS Client Configuration plan must have been completed. If it is not, go to "Chapter 16. Planning Your Installation" and complete the plan. Then, return here and continue with the next section, "B. Mounting an NFS File System."

B. Mounting an NFS File System

The following procedure describes how to mount the NFS file system from the server machine on the client machine.

For more information on NFS refer to the "Network File System (NFS) Overview for System Management" in *Communication Concepts and Procedures*.

PROCEDURE:

1. Be sure you have logged in as root on the client machine.
2. If the mount point does not exist, create a directory structure to serve as a mount point for the remote file system. Use the **mkdir -p** command to create the mount point.

For example, to make a mount point using the directory structure **/source/MITX11/R5**, you would type:

```
mkdir -p /source/MITX11/R5
```

and press Enter.

3. On the client machine, type the following:

smit mknfsmnt (or smit -C mknfsmnt if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| Add a File System for Mounting | | |
|---|----------------|-------------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | |
| [TOP] | [Entry Fields] | |
| * PATHNAME of mount point | [] | / |
| * PATHNAME of remote directory | [] | |
| * HOST where remote directory resides | [] | |
| Mount Type NAME | [] | |
| * Use SECURE mount option? | no | + |
| * MOUNT now, add entry to /etc/filesystems or both? | now | + |
| * /etc/filesystems entry will mount the directory on system RESTART. | no | + |
| * MODE for this NFS file system | read-write | + |
| * ATTEMPT mount in background or foreground | background | + |
| NUMBER of times to attempt mount | [] | # |
| Buffer SIZE for read | [] | # |
| Buffer SIZE for writes | [] | # |
| NFS TIMEOUT. In tenths of a second | [] | # |
| [MORE...19] | | |
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F5 = Undo | F6 = Command | F7=Edit |
| F9 =Shell | F10=Exit | Enter=Do |

4. Use the following procedure for the Add a File System for Mounting screen .

Note: Do *not* press Enter until you get to step 6.

Refer to your NFS Client Configuration worksheet. Type the information from the worksheet to the following fields on the Add a File System for Mounting screen :

- Pathname of mount point
- Pathname of remote directory
- Host where remote directory resides.

Refer to your worksheet. Press the Tab key to change to the correct value:

- Mount now, add entry to **/etc/filesystems** or both?
- **/etc/filesystems** mounts directory on system restart
- Mode for this NFS file system.

Note: Depending on your network configuration, you may not need to complete all of the entries on this screen.

5. You can use the default values for the remaining entries or change them depending on your NFS configuration.
6. When you have finished making changes on this screen, press Enter to mount the NFS file system.
7. A COMMAND STATUS screen appears. When the Command: status indicator changes to OK, press F10 to exit SMIT.

The NFS file system is now ready to use.

Related Information

After your system is installed, you can use InfoExplorer, your online hypertext information library, to learn more about your system. You can step through the InfoExplorer menus or use the search function to locate information such as command names and article titles. You can also look for information in your hardcopy books if you ordered them.

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **smit** command.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

Chapter 15. Backing Up Your System

The Version 3.2 Base Operating System (BOS) offers several methods for backing up your system. The procedure in this chapter describes how to create a backup copy (image) of your system's root volume group by using the SMIT Backup the System menu. This menu uses the **mkszfile** and **mksysb** (make system backup) commands to create a backup image. You can back up your system to tape or diskettes.

Note: If you used the procedures in "Chapter 5. BOS Installation for Use with a /usr Server" to install your system, you cannot reinstall your system from a backup image.

This chapter includes the following sections:

- Introduction to Backing Up Your System 15-1
- Flowchart for Backing Up Your System 15-3
- Procedure for Backing Up Your System 15-4
- Related Information 15-9

Introduction to Backing Up Your System

A backup image serves two purposes:

1. To restore a corrupted system using the system's own backup image.
2. To install and configure software on one system and then duplicate that installation on other systems.

It is important to keep in mind that the SMIT Backup the System menu only backs up the root volume group you are currently using. A *root volume group* is a hard disk, or group of disks, that contains the boot (start up) files, the Base Operating System, configuration information, and any optional software products that are installed on your system. Most systems, only have one root volume group. However, if your system has more than one root volume group, you must run the Backup the System function from within each root volume group. In addition, if you have any nonroot (unbootable) volume groups on your system, you should use the SMIT Backup Files in a File System menu to back up these file systems.

It is important to understand the terms *source system* and *target system*. The source system is the system from which you created the backup copy. The target system is the system on which you are installing the backup copy.

Beginning with Version 3.2, user configuration information may be retained when the SMIT Backup the System function is used. This means that you may avoid some of the configuration tasks that normally must be done after a system backup is restored. The configuration information will be retained during installation if:

- The target system has the same hardware configuration as the source system.
- AND
- The target has at least as much disk space as the source system.

During the installation of the backup image, the system checks to see if the target system has enough disk space to create all the logical volumes that are stored on the backup. If there is enough disk space on the target system, the entire backup is recovered. If there is not enough disk space, the installation will halt and the system will prompt you to choose

more destination hard disks. When file systems are created on the target system they will be the same size as they were on the source (except for **/tmp** which will be at least 8 megabytes).

After the installation is complete, the Object Data Manager (ODM) on the target system is reconfigured. If the target system does not have exactly the same hardware configuration as the source system, the device attributes may be modified in the following target system files:

- All files in **/etc/objrepos** beginning with Cu
- All files in the **/dev** directory

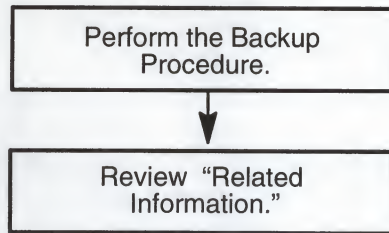
Note: If you are using the backup image for installation on additional systems, there are two types of configuration data that you may not want copied to the target systems: passwords, and network addresses. If passwords from the source are copied to the target systems, this can create security problems. If network addresses are copied to a target system, duplicate addresses can disrupt network communications.

If you want to use the backup image to restore the system that you used to create it, you should create the backup *after* you have configured the system.

If you plan to use a backup image for installing on other target systems, then you should create your backup image *before* you configure the source system.

Flowchart for Backing Up Your System

This flow chart shows the basic steps that will be covered in this chapter.



The Procedure for Backing Up Your System

Use the following procedure to create a backup of the system on either tape or diskette.

PROCEDURE:

1. If you are not already logged in as the root user, log in as root now.
2. This procedure will *not* backup any unmounted file systems that are inside the root volume group. Therefore, if there are any unmounted file systems that you want backed up, you should mount them before proceeding. If there are any mounted file systems that you do *not* want backed up, you should unmount them before making the backup.

Note: File systems that are mounted across a network using NFS are never backed up by the **mksysb** command.

3. If a local directory is mounted over another local directory, this procedure will backup the files twice. Therefore, you should unmount any local directories which are mounted over another local directory.

For example, if you mounted **/tmp** over **/usr/tmp**, the files in the **/tmp** directory will be backed up twice.

4. Use the following instructions to find your start point.

Tape If you are backing up your system to tapes, go to step 6.

Diskette If you are backing up your system to diskettes, go to step 5.

5. Make sure you have an adequate supply of formatted diskettes.

If you do not need to format diskettes, go to step 9 on page 15-6.

If you need to format diskettes, follow these steps:

- a. Insert a blank diskette into the diskette drive.

- b. Type the following:

```
format
```

and press Enter.

- c. When the system prompt returns, remove the diskette.
- d. Repeat steps a through c for each diskette you want to format.
- e. When you have finished formatting diskettes, go to step 9 on page 15-6.

6. Type the following:

```
smit lsdtp
```

(or type `smit -C lsdtp` if you are working in AIXwindows.)

and press Enter.

A screen similar to the following displays:

| COMMAND STATUS | | | | |
|--|-----------|-------------|-----------------------|--|
| Command: OK | | stdout: yes | stderr: no | |
| Before command completion, additional instructions may appear below. | | | | |
| name | status | location | description | |
| rmt0 | Available | 00-08-00-30 | 2.3 GB 8mm Tape Drive | |

Tape

If you are backing up your system to tapes, the tape drive name starts with rmt followed by the tape drive number. For example, the first tape drive on your system is zero and is displayed as rmt0.

7. Write down on a sheet of paper the name of the tape drive. Be sure to get the name from your display screen, not from the example of the display screen in step 6.
8. Press F10 to exit SMIT.

9. Type the following:

`smit startup`

(or type `smit -C startup` if you are working in AIXwindows.)

and press Enter.

A SMIT System Startup menu similar to the following displays:

SYSTEM STARTUP MENU

Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

Backup the System
System Environments
Install / Update Software
TCP/IP
NFS

| | | | |
|----------|------------|-----------|----------|
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

10. Backup the System is highlighted. Press Enter to select it. A screen similar to the following displays:

Backup the System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

WARNING: Execution of the backup command will result in the loss of all material previously stored on the selected output medium. This command backs up only rootvg volume group.

FORCE increase of workspace if needed

*Backup DEVICE or FILE
(example: /dev/rfd0)

[Entry Fields]

no +

[]

| | | | |
|-----------|--------------|-------------|------------|
| F1 = Help | F2 = Refresh | F3 = Cancel | F4 = List |
| F5 = Undo | F6 = Command | F7=Edit | F8 = Image |
| F9 =Shell | F10=Exit | Enter=Do | |

17. Write-protect the backup tapes or diskettes you just created.

You have created the backup of your current root volume group (RVG). If you have only one RVG on your system and do not have any nonroot volume groups, go to step 18.

If there is another root volume group on your system (most systems only have one), make the next root volume group active (for instructions see the **bootlist** command). Then, reboot the system and return to the beginning of the backup procedure and repeat the procedure for the second root volume group using fresh tapes or diskettes.

If you have any nonroot volume groups, you should back these up now to fresh tapes or diskettes using the SMIT Backup Files in a Filesystem menu.

To access this menu, type the following:

```
smit backup          (or type smit -C backup if you are working in
                     AIXwindows.)
```

and press Enter.

When you are finished backing up all your volume groups, go to step 18.

18. Read the information next to the media you are using to backup the system:

| | |
|----------|---|
| Tape | The tapes you just created are bootable. This is a new feature of Version 3.2. Tapes made using the procedure in this chapter can be used to start your system if for some reason you cannot boot from your hard disks. |
| Diskette | If you backed up to diskettes, the backup diskettes cannot be used to boot your system. If you did not purchase a set of BOSboot diskettes along with your current version of BOS or if you have updated BOS since the initial purchase, you need to create a set of BOSboot diskettes to boot your system. Go to "Chapter 11. Creating the BOSboot Diskettes." |

The procedures for installing (or restoring) a backup image are contained in "Chapter 3. BOS Installation from a System Backup."

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **tar** command, **ls** command, and **smit** command.

The Backup Overview in *System Management Guide* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *System Management Guide* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *System Management Guide* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *System Management Guide* provides information on mounting files and directories, mount points, and automatic mounts.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

The Getting Started (InfoExplorer Windows) or the Getting Started (InfoExplorer ASCII) in *System User's Guide* describes how to begin using InfoExplorer.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

NOTES

Part III. Reference Information

Chapter 16. Planning Your Installation

This chapter includes the following installation plans:

- BOS Installation Plans 16-2
 - Preservation BOS Installation Plan 16-3
 - New or Complete Overwrite BOS Installation Plan 16-6
- Network Parameters Plan 16-9
- /usr Server Parameters Plan 16-11
- TCP/IP Minimum Configuration and Startup Plan 16-13
- Updating the Host List Plan 16-15
- NFS Client Configuration Plan 16-16
- Creating File Systems Plan (Installing the Operating System) 16-18
- Creating File Systems Plan (Using the Server's /usr) 16-20
- Adding a Diskless Client Plan 16-22
- Optional Software Installation Plan 16-25

BOS Installation Plans

This section contains instructions for planning your BOS installation.
Go to the subsection below for the type of BOS installation you are performing.

- Tape or diskette Installation, go to "A. Tape or Diskette Installation".
- System backup Installation, go to "B. System Backup Installation".
- Network installation, go to "C. Network Installation".
- Installation for use with a **/usr** Server, go to "D. Network Installation for Use with a **/usr** Server".

A. Tape or Diskette Installation

1. Are you performing a preservation installation?

YES: Complete the Preservation BOS Installation Plan on page 16-3.

NO: Complete the New or Complete Overwrite BOS Installation Plan on page 16-6.

2. Return to "Chapter 2. BOS Installation from CD-ROM, Tape, or Diskette."

B. System Backup Installation

1. Are you using a network to get your backup?

YES: Complete the Network Parameters Plan on page 16-9.

NO: Go to step 2.

2. Return to "Chapter 3. BOS Installation from a System Backup."

C. Network Installation

1. Complete the Network Parameters Plan on page 16-9.

2. Are you performing a preservation installation?

YES: Complete the BOS Installation Plan (Preservation) on page 16-3.

NO: Complete the BOS Installation Plan (New or Complete Overwrite) on page 16-6.

3. Return to "Chapter 4. BOS Installation from a Network."

D. Network Installation for Use with a **/usr** Server

1. Are you using a network to get your installation image?

YES: Complete the Network Parameters Plan on page 16-9.

NO: Go to step 2.

2. Complete the **/usr** Server Parameters Plan on page 16-11.

3. Return to "Chapter 5. BOS Installation for Use with a **/usr** Server."

Preservation BOS Installation Plan

The instructions in this section will guide you in determining whether you have enough disk space for the software you plan to install in the current root volume group.

Note: If you are confident you have enough disk space for the software you plan to install, you do not need to complete this plan. Return to the step you departed from in the section titled "BOS Installation Plans" on page 16-2.

Use the instructions below to fill out the Preservation BOS Installation Worksheet on page 16-5. The letters in the instructions refer to the letters in front of the items on the Preservation BOS Installation Worksheet.

Note: If you used the "Upgrade Utilities" to create the system documentation, use this documentation to fill out the worksheet and then skip to step 5 on page 16-4. If you did not use the "Upgrade Utilities" to create the documentation, begin with step 1.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
ipl_varyon -i
```

and press Enter.

If you are using Version 3.2, the system display is similar to the following:

| PV_NAME | BOOT DEVICE | PVID | VOLUME GROUP ID |
|---------|-------------|------------------|------------------|
| hdisk0 | YES | 000000006d1520c9 | 000000006d159f6e |
| hdisk1 | NO | 000000006d157ab7 | 000000006d159f6e |

If you are using Version 3.1.x, the system display is similar to the following:

| VOLUME GROUP 000000006d159f6e0000000000000000 | | | |
|---|----------------------------------|-------------|--|
| PVNAME | PVID | BOOT DEVICE | |
| hdisk0 | 000000006d1520c90000000000000000 | YES | |
| hdisk1 | 000000006d157ab70000000000000000 | NO | |

3. Write the VOLUME GROUP IDs and PV_NAMES on your plan for each hard drive listed in step 2.
4. Repeat steps a through b below for each PV_NAME from step 3.
 - a. Type the following:

```
lsdev -C -l pv_name (where pv_name is the physical volume name  
[PV_NAME] of the hard drives from step 3  
and the -l is a lowercase "L".)
```

and press Enter

For example, if you entered `lsdev -C -l hdisk0`, the system display is similar to the following:

```
hdisk0 Available 00-01-00-00 320 MB SCSI Disk Drive
```

- b. Write the location and size on your plan.

For example, you would write 00-01-00-00 under the LOCATION column and 320 under the SIZE column.

Note: For a Direct-Attached Disk Drive the size will be 120.

5. Type the following:

```
df /
```

and press Enter.

6. Write down the Total KB number that appears on your screen on the line next to Total KB for / (root) on row A. Divide the number you wrote down by 1024 and write this new number on the far right blank on row A.

7. Type the following:

```
df /usr
```

and press Enter.

8. Write down the Total KB number that appears on your screen on the line next to Total KB for /usr on row B. Divide the number you wrote down by 1024 and write this new number on the far right blank on row B.

9. Type the following:

```
ls -l /
```

and press Enter.

10. Write down the FREE PPs: number that appears between the parentheses, the number of megabytes, on the line next to FREE PPs on row C.

11. Add the three numbers in the far right column on rows A, B, and C and write it on the line next to Available Space on row D.

12. Refer to "Chapter 17. Product Information" to determine whether you have enough disk space for the software you plan to install. Include any prerequisite programs for the software you plan to install.

You have completed this worksheet. Return to the step you departed from in the section titled "BOS Installation Plans" on page 16-2.

Preservation BOS Installation Worksheet

Make a photo copy of this worksheet and fill it out according to the directions on page 16-3.

System Name: _____

System Administrator: _____

Date: _____

| PV Name | VG Identifier | Location | Size |
|---------|---------------|----------|------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

A. Total KB for / (root) _____ / 1024 = _____

B. Total KB for /usr _____ / 1024 = _____

C. FREE PPs _____

D. Available Space _____

New or Complete Overwrite BOS Installation Plan

The instructions in this section will guide you in selecting the hard drives for the root volume group for a new or complete overwrite installation.

Use the instructions below to fill out the New or Complete Overwrite BOS Installation Worksheet on page 16-8.

Note: If you have only one hard drive or you want to use all your hard drives for the root volume group, you do not need to complete this plan. Return to the step you departed from in the section titled "BOS Installation Plans" on page 16-2.

Note: If you used the "Upgrade Utilities" to create system documentation, use the documentation to fill out the worksheet and then skip to step 6 on page 16-7. Otherwise, begin with step 1.

1. If you are performing a new installation, refer to the "About Your Machine" document and write down the size of each hard drive on the worksheet. Skip to step 6 on page 16-7.

If you are performing a complete overwrite installation, go to step 2.

2. If you are not already logged in as root, log in as root now.

3. Type the following:

```
ipl_varyon -i
```

and press Enter.

If you are using Version 3.2, the system display is similar to the following:

| PV_NAME | BOOT DEVICE | PVID | VOLUME GROUP ID |
|---------|-------------|------------------|------------------|
| hdisk0 | YES | 000000006d1520c9 | 000000006d159f6e |
| hdisk1 | NO | 000000006d157ab7 | 000000006d159f6e |

If you are using Version 3.1, the system display is similar to the following:

| VOLUME GROUP | PVNAME | PVID | BOOT DEVICE |
|----------------------------------|--------|----------------------------------|-------------|
| 000000006d159f6e0000000000000000 | hdisk0 | 000000006d1520c90000000000000000 | YES |
| | hdisk1 | 000000006d157ab70000000000000000 | NO |

4. Write the VOLUME GROUP IDs, BOOTABLE DEVICE and PV_NAMEs on your worksheet for each hard drive listed in step 3.
5. Repeat steps a through b below for each PV_NAME from step 4.

- a. Type the following:

```
lsdev -C -l pv_name (where pv_name is the physical volume name  
[PV_NAME] of the hard drives from step 4 and the -l is  
a lowercase "L".)
```

and press Enter

For example, if you entered `lsdev -C -l hdisk0`, the system display is similar to the following:

```
hdisk0 Available 00-01-00-00 320 MB SCSI Disk Drive
```


- b. Write the location and size on your plan.

For example, you would write 00-01-00-00 under the LOCATION column and 320 under the SIZE column.

Note: For a Direct-Attached Disk Drive the size will be 120.

6. Refer to "Chapter 17. Product Information" to determine the disk space requirements of the software that you plan to install. Include any prerequisite programs for the software you plan to install.

Write the disk space requirement number on row A.

7. Calculate system paging space based on the total size of RAM (memory cards) to be configured on your system unit.

- Typically, paging space should be equal to twice the amount of RAM. When RAM exceeds 64MB, paging space should be equal to RAM plus 16MB.
- If the amount of RAM is larger than 16MB, paging space is allocated across disks at time of installation.
- Paging space is limited to 20% of a given disk.

Write the paging size number on row B.

8. The disk space requirement number on row A represents only the licensed programs you plan to install. Estimate how much space you will need for your data and for any additional applications.

Write the additional disk space requirement number on row C.

9. Add the rows A, B, and C and write the total on row D.

10. Use the total on row D to determine which hard drives you need. Consider that 1MB of software is equal to 1,048,576 storage locations, while 1MB of disk drive capacity is equal to 1,000,000 storage locations. The following table can help you determine your disk drive requirements.

| RISC System/6000 Disk Drive | Maximum Software per Disk Drive |
|--|---------------------------------|
| IBM 160MB Direct-Attached Disk Drive | 152MB |
| IBM 160MB SCSI Disk Drive | 152MB |
| IBM 320MB SCSI Disk Drive | 304MB |
| IBM 355MB SCSI Disk Drive | 336MB |
| IBM 400MB SCSI Disk Drive | 380MB |
| IBM 670MB SCSI Disk Drive | 636MB |
| IBM 800MB SCSI Disk Drive (400MB pair) | 760MB |
| IBM 857MB SCSI Disk Drive | 816MB |
| IBM 857MB Serial Disk Drive | 816MB |

Mark the hard drives on the worksheet that you want to use.

You have completed this worksheet. Return to the step you departed from in the section titled "BOS Installation Plans" on page 16-2.

New or Complete Overwrite BOS Installation Worksheet

Make a photo copy of this worksheet and fill it out according to the directions on page 16-6.

System Name: _____

System Administrator: _____

Date: _____

| PV Name | Location | Size | VG Identifier | Bootable Disk |
|---------|----------|------|---------------|---------------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
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| | | | | |

A. Disk Space Requirements _____ (MB)

B. Paging Space Requirements _____ (MB)

C. Additional Disk Space Requirements _____ (MB)

D. Total Disk Space Requirements _____ (MB)

Network Parameters Plan

The instructions in this section will guide you in collecting the information you need to install BOS over a network.

Use the instructions below to fill out the Network Parameters Worksheet on page 16-10. The letters in the instructions refer to the letters in front of the items on the Network Parameters Worksheet.

Note: Do *not* write down any leading zeros in the client, server, gateway and subnet mask addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. Write down the client IP address on row B.
2. Write down the server IP address on row C.
3. If you are using a subnet mask, write it down on row D.
4. If you are using a gateway, write down the gateway's address on row E.
5. Are you using Token-Ring for network communications?
 - YES: Circle **/dev/tok** in row A.
Circle the ring speed (**4** or **16**) in row F.
 - NO: Circle **/dev/ent** in row A.
Circle the connector type (**bnc** or **15 pin d-type**) in row G.

You have completed this worksheet. Return to the step you departed from in the section titled "BOS Installation Plans" on page 16-2.

Network Parameters Worksheet

Make a photo copy of this worksheet and fill it out according to the directions on page 16-9.

System Name: _____

System Administrator: _____

Date: _____

A. Input Installation Device: [**/dev/tok** or **/dev/ent**]

B. Client IP Address: []

C. Server IP Address: []

D. Subnet Mask: []

E. Gateway IP Address: []

F. Data Ring Speed (Token-Ring only): [**4** or **16**]

G. Ethernet Connector (Ethernet only): [**bnc** or **15 pin d-type**]

/usr Server Parameters Plan

The instructions in this section will guide you in collecting the information you need to install BOS with a **/usr** server.

Use the instructions below to fill out the /usr Server Parameters Worksheet on page 16-12. The letters in the instructions refer to the letters in front of the items on the /usr Server Parameters Worksheet.

Note: Do *not* write down any leading zeros in the client, server, gateway and subnet mask addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. Write down the client address on row B.
2. Write down the server address on row C.
3. If you are using a gateway, write down the gateway's address on row D.
4. If you are using a subnet mask, write it down on row E.
5. Are you using the Token-Ring Network Interface for network communications?

YES: Write down tr Token-Ring on row A.
Circle the ring speed (**4** or **16**) in row F.

NO: Circle the connector type (**bnc** or **15 pin d-type**) in row G.

6. Are you using the Standard Ethernet Network Interface?

YES: Write down en Standard Ethernet on row A.

NO: Write down et IEEE 802.3 Ethernet on row A.

You have completed this worksheet. Return to the step you departed from in the section titled "BOS Installation Plans" on page 16-2.

/usr Server Parameters Worksheet

Make a photo copy of this worksheet and fill it out according to the directions on page 16-11.

System Name: _____

System Administrator: _____

Date: _____

A. Network Interface: []

B. Client Address: []

C. Server Address: []

D. Gateway Address: []

E. Subnet Mask: []

F. Token-Ring Data Rate (Token-Ring only): [**4 or 16**]

G. Ethernet Connector (Ethernet only): [**bnc or 15 pin d-type**]

TCP/IP Minimum Configuration and Startup Plan

The instructions in this section will guide you in collecting the information you need to configure TCP/IP for network communications.

Use the instructions below to fill out the TCP/IP Minimum Configuration and Startup Worksheet on page 16-14. The letters in the instructions refer to the letters in front of the items on the TCP/IP Minimum Configuration and Startup Worksheet.

Note: Do *not* write down any leading zeros in the Internet, gateway and subnet mask addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. For row A, write down the two-letter abbreviation for the type of network interface you are using.
 - en – Standard Ethernet Network Interface
 - et – IEEE 802.3 Ethernet Network Interface
 - tr –Token-Ring Network Interface
2. Write down the host name on row B.
3. Write down the Internet address on row C.
4. If you are using a subnet mask, write down the subnet mask on row D.
5. If you are using a nameserver, do the following:
 - a. Write down the nameserver's address in row E.
 - b. Write down the domain name in row F.
6. If you are using a gateway, write down the gateway's address on row G.
7. Are you using a Token-Ring for network communications?
 - YES: Circle the ring speed (**4** or **16**) in row H.
 - NO: Circle the type or Ethernet connection you will be using (**bnc** or **dix**) in row I.

If you are using a nameserver, you have completed this plan. Return to the section titled "Configuring TCP/IP" in "Chapter 14. Network Configuration."

If you are *not* using a nameserver, go to the section titled "Updating the Host List" on page 16-15 and complete the host list table.

TCP/IP Minimum Configuration and Startup Worksheet

Make a photo copy of this worksheet and fill it out according to the directions on page 16-13.

System Name: _____

System Administrator: _____

Date: _____

A. Network Interface: []

B. Host Name: []

C. Internet Address: []

D. Network Mask: []

Nameserver

E. Internet Address: []

F. Domain Name: []

G. Default Gateway Address: []

H. Ring Speed (Token-Ring only): [**4 or 16**]

I. Your Cable Type (Ethernet only): [**bnc or dix**]

Updating the Host List Plan and Worksheet

Make a photo copy of this worksheet and fill it out the copy according to the following directions.

Note: Do *not* write down any leading zeros in the Internet addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. Fill in the Host List below for *each* of the other systems on your network with which you need to communicate.

When filling out the Host List, keep the following points in mind:

- a. The Internet addresses and host names must be unique. Addresses and names cannot be duplicated in the list.
- b. The Aliases column does not have to be filled in. An alias is an additional host name (a synonym) for the host name in column 2.

| Internet Address | Host Name | Aliases | Comments |
|------------------|-----------|---------|----------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
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| | | | |

Return to the section titled "Configuring TCP/IP" in "Chapter 14. Chapter 14. Network Configuration".

NFS Client Configuration Plan

Your system administrator can provide you with the information necessary to complete this plan.

The instructions in this section will guide you in collecting the information you need to configure an NFS client for network communications.

Use the instructions below to fill out the NFS Client Configuration Worksheet on page 16-17. The letters in the instructions refer to the letters in front of the items on the NFS Client Configuration Worksheet.

1. Write down on row A the full path name of the mount point (directory) on your client where you want to mount the server's file system.
2. Write down on row B the full path name of the directory of the server's file system.
3. Write down on row C the host name of the server.
4. Do you want to have this file system available every time your system restarts?
YES: Write down both in row D.
Circle yes in row E.
NO: Go to step 5.
5. Do you want to manually make this file system available every time your system restarts?
YES: Write down both in row D.
Circle no in row E.
NO: Write down now in row D.
Circle no in row E.
6. Do you only need to read the remote file system?
YES: Write down read-only in row F.
NO: Write down read-write in row F.

You have completed this worksheet. Return to the section titled "Configure a NFS Client" in "Chapter 14. Network Configuration."

NFS Client Configuration Worksheet

Make a photo copy of this worksheet and fill it out according to the directions on page 16-16.

System Name: _____

System Administrator: _____

Date: _____

- A. Path Name of Mount Point: []
- B. Path Name of Remote Directory: []
- C. Host Where Remote Directory Resides: []
- D. Mount Now, Add to **/etc/filesystems**, or Both? []
- E. **/etc/filesystem** Mounts Directory on System Restart? [yes or no]
- F. Mode for This NFS File System: []

Creating File Systems Plan (Installing the Operating System)

The instructions in this section will guide you in collecting the information you need to provide resources for diskless workstations (clients).

Use the instructions below to fill out the Creating File System Worksheet (Installing the Operating System) on page 16-19. The letters in the instructions refer to the letters in front of the items on the worksheet.

1. A SPOT name is not a host name, but it is a name that describes a group of diskless workstations. For example, if you are creating a SPOT for Department 500, you could name the SPOT, dept500.

Write down the SPOT name on the SPOT Name line on your worksheet.

2. To calculate the size of the SPOT file system, use the following formula:
(where 70 is the size in megabytes [MB] of the Base Operating System [BOS] and 2048 is the number of 512-byte blocks in 1MB)

file system size = (70 + disk space required for optional software) x 2048.

To find the disk space required for optional software (excluding the Base Operating System) refer to "Chapter 17. Product Information."

Write the number you calculate on row A.

3. To calculate the size of the root file system, use the formula:
(where 4 is the minimum size [MB] required for the root portion of the client and 2048 is the number of 512-byte blocks in 1MB)

file system size = number of workstations x 4 x 2048.

Write the number you calculate on row E.

4. To calculate the size of the home file system, use the following formula:
(where 2048 is the number of 512-byte blocks in 1MB)

file system size = (number of MB per user) x (total number of users on all workstations) x 2048.

Write the number you calculate on row G.

For example, if you want to allow 1.5 megabytes (MB) of hard disk space per user and you have 6 users on client machine A and 4 users on client machine B, you would have a total of 10 users for this home file system. $1.5 \times 10 \times 2048 = 30720$. You would write 30720 on row G.

5. To calculate the size of the paging file system, use the following formula:
(where the first 2048 number is the number of 512-byte blocks in 1MB, the second 2048 number is extra space required by the file system, and 2 represents twice the amount of RAM available to all workstations.)

file system size = (total number of MB of RAM for all workstations x 2 x 2048) + 2048.

To find the amount of RAM (memory cards) that was shipped with a workstation, refer to the "About Your Machine" document that came with the workstation.

Write the number you calculate on row K.

You are finished with this worksheet. Return now to "Chapter 10. Diskless System Installation."

Creating File Systems Worksheet (Installing the Operating System)

Make a photo copy of this worksheet and fill it out according to the directions on page 16-18.

SPOT Name:

System Name:

System Administrator: _____

Date: _____

Add a File System

Check the boxes below after you have added each file system.

[] SPOT file system (minimum size 143360)

A. Size of file system: [

B. Mount Point: [/export/exec

☐ Share file system

```
C. Size of file system: ..... [ 8192
D. Mount Point: ..... [ /export/share
```

[] Root file system (minimum size 8192)

```
E. Size of file system: ..... {
F. Mount Point: ..... /export/root
```

[] Home file system

```
G. Size of file system: ..... {
H. Mount Point: ..... /export/home
```

[] Dump file system

```
I. Size of file system: ..... [ 16384
J. Mount Point: ..... [ /export/dump
```

[] Paging file system (minimum size 67584)

```

K. Size of file system: ..... [
L. Mount Point: ..... [ /export/swap

```

☐ BOOTP file system

```
M. Size of file system: ..... [ 8192
N. Mount Point: ..... [ /tftpboot
```

Creating File Systems Plan (Using the Server's /usr)

The instructions in this section will guide you in collecting the information you need to provide resources for diskless workstations (clients).

Use the instructions below to fill out the Creating File Systems Worksheet (Using the Server's /usr) on page 16-21. The letters in the instructions refer to the letters in front of the items on the worksheet.

1. A SPOT name is not a host name, but it is a name that describes a group of diskless workstations. For example, if you are creating a SPOT for Department 500, you could name the SPOT, dept500.

Write down the SPOT name on the SPOT Name line on your worksheet.

2. To calculate the size of the root file system, use the formula:
(where 4 is the minimum size [MB] required for the root portion of the client and 2048 is the number of 512-byte blocks in 1MB)

file system size = number of workstations x 4 x 2048.

Write the number you calculate on row A.

3. To calculate the size of the home file system, use the following formula:
(where 2048 is the number of 512-byte blocks in 1MB)

file system size = (number of MB per user) x (number of users on *all* workstations) x 2048.

Write the number you calculate on row C.

For example, if you want to allow 1.5 megabytes (MB) of hard disk space per user and you have 6 users on client machine A and 4 users on client machine B, you would have a total of 10 users for this home file system. $1.5 \times 10 \times 2048 = 30720$. You would write 30720 on row C.

4. To calculate the size of the paging file system, use the following formula:
(where the first 2048 number is the number of 512-byte blocks in 1MB, the second 2048 number is extra space required by the file system, and 2 represents twice the amount of RAM available to *all* workstations)

file system size = (total number of MB of RAM for *all* workstations x 2 x 2048) + 2048.

To find the amount of RAM (memory cards) that was shipped with a workstation, refer to the "About Your Machine" document that came with the workstation.

Write the number you calculate on row G.

You are finished with this worksheet. Return now to "Chapter 10. Diskless System Installation."

Creating File Systems Worksheet (Using the Server's /usr)

Make a photo copy of this document and fill it out according to the directions on page 16-20.

SPOT Name: _____

System Name: _____

System Administrator: _____

Date: _____

Add a File System

Check the boxes below after you have added each file system.

☐ Root file system (minimum size 8192)

A. Size of file system: []
B. Mount Point: [**/export/root**]

☐ Home file system

C. Size of file system: []
D. Mount Point: [**/export/home**]

☐ Dump file system

E. Size of file system: []
F. Mount Point: [**16348**
 /export/dump]

☐ Paging file system (minimum size 67584)

G. Size of file system: []
H. Mount Point: [**/export/swap**]

☐ BOOTP file system

M. Size of file system: []
N. Mount Point: [**8192**
 /tftpboot]

Adding a Diskless Client Plan

The instructions in this section will guide you in collecting the information you need to configure diskless workstations (clients).

Note: NetWare v3.11 can run on a diskless server but not on a diskless client.

Use the instructions below to fill out the Adding a Diskless Client Worksheet on page 16-24. The letters in the instructions refer to the letters in front of the items on the worksheet.

Note: Do *not* write down any leading zeros in the Internet, gateway and subnet mask addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. Are you using a nameserver (the term nameserver is defined in the glossary)?
YES: I am using a nameserver – write N/A on rows A and B, and go to step 4.
NO: I am not using a nameserver – go to step 2.
2. Write down the Internet address of the diskless client on row A.
3. Write down the diskless client's host name on row B.
4. Write down the SPOT name on row C.
5. Write down the diskless client's host name on row D.
6. If you are using Ethernet, circle 1 on row E.
If you are using Token-Ring, circle 6 on row E.
7. For each diskless client you want to add to your diskless community, you must have the hardware address of the client's network adapter.
Note: The hardware address is *not* the same as the Internet address (dotted decimal).
If you already know the client's hardware address, write it down on row F and continue with step 8.
If you do *not* know the client's hardware address, refer the documentation that came with your workstation and follow the setup procedure until you are told to write down the hardware address. Then, return here and write it down on row F.
For example, if you are adding a Model 7011, refer to the *7011 Setup and Operator Guide*. For a Model 7012, use the *7012 POWERstation and POWERserver Guide*.
8. If you are using a gateway for network communications, write down the gateway's network address on row G.
Note: You must use a subnet mask if you use a gateway.
9. If you are using a subnet mask for network communications, write down the subnet mask on row H.

10. To calculate the paging size for the client you wrote down on row D, use the formula:
(where 2048 is the number of 512-byte blocks in 1MB and 2 represents twice the amount of RAM available to the client)

paging size = (number of megabytes of RAM for client on row D x 2) x 2048.

Write down the result in row I.

To find the amount of RAM (memory cards) that came with the client, refer to the "About Your Machine" document that came with your client.

You are finished with this worksheet. Return now to "Chapter 10. Diskless System Installation."

Adding a Diskless Client Worksheet

Make a photo copy of this worksheet and fill it out according to the directions on page 16-22.

Note: You must complete this section for *each* diskless client machine that you are adding to your diskless community.

Server Host name: _____

System Administrator: _____

Date: _____

Add a Host Name

A. Internet Address: []

B. Client: []

Add a Diskless Client

C. SPOT Name: []

D. Client Host name: []

E. Network Hardware Type [1 or 6]

F. Hardware Address of Client: []

G. Gateway Address []

H. Subnetmask []

I. Paging Size in Blocks []

Optional Software Installation Plan

The instructions in this section will guide you in collecting the information you need to install optional software products.

Use the instructions below to fill out the Optional Software Installation Worksheet on page 16-26.

1. Type the following:

```
df /usr
```

and press Enter.

2. Divide the number in column three that appears on your screen by 1024 and write it in the Free Megabytes space on your worksheet.

3. Type the following:

```
lsvg rootvg
```

and press Enter.

Look at the field labeled FREE PPs. Write into the Free PPs line in your worksheet the number that appears in the parentheses (*not* the number to the left of the parentheses).

4. Add the Free Megabytes and FREE PPs numbers together and write down the sum on the line next to DISK SPACE AVAILABLE on the worksheet.

5. If you want to list the software on your installation media, do the following:

- a. If you are using tapes or diskettes, insert the first tape or diskette.

- b. Type the following:

```
smit install_list
```

and press Enter.

- c. At the List All Software on Installation Media screen, press F4 to generate a list of input devices.

- d. Move the cursor to highlight the device or directory from which you are installing:

/usr/sys/inst.images

if you are installing over a network

/dev/rmtx.1

if you are installing from tape

/dev/fdx

if you are installing from diskette

and press Enter.

- e. Press Enter again to list the software. Use the Up and Down arrow keys or the Page Up and Page Down keys to scroll through the list.

- f. When you are finished viewing the list, press F10 to exit SMIT.

6. Refer to "Chapter 17. Product Information" to complete the Optional Software Installation Worksheet on page 16-26.

You have completed this worksheet. Return now to "Chapter 6. Optional Software Installation."

Optional Software Installation Worksheet

Make a photo copy of this worksheet and fill it out according to the directions on page 16-25.

[illegible]

TOTAL SPACE NEEDED: _____

DISK SPACE AVAILABLE: _____

Free Megabytes: _____

Free PPs: _____

Chapter 17. Product Information

This chapter contains installation information that is unique to the separately installable software products (software packages) and their options and subsystems. *Optional software products* include those that are purchased separately as well as those that are shipped with the current release of AIX Version 3.2 Base Operating System (BOS). Each software product can contain a variety of separately installable options.

Note: Before you begin installing your optional software, use the product-specific information in this chapter along with the Optional Software Installation Plan (on page 16-25) to plan your installation.

This chapter contains the following sections:

- Format of Product Information 17-2
- Understanding Option Names 17-3
- List of Optional Software Products 17-4

Note: For more information about installing optional software product options, refer to “Appendix A. Optional Software Installation and Update Concepts.” For more information about specific software products, refer to the software documentation.

Format of Product Information

The following information is listed for optional software products:

Note: Each of the following sections is listed only where applicable. For example, if no special hardware is required for a software product, the special hardware requirements section is omitted.

Product Description

Describes the software product.

Option Names Lists the option names and descriptions of those options. For an explanation of naming conventions and abbreviations, refer to the next section, "Understanding of Option Names."

This section also lists the names of functionally related groups of software components called *subsystems*.

Note: If changes or updates have not been made or added to an option, no subsystems will be listed.

Prerequisite Software

Lists other software product options that must be installed *before* or *with* the software product option.

Note: Most software products require that the Version 3.2 Base Operating System (**bos.obj**) be installed. The only exceptions are ESSL, OSIMF, and the compilers C, XL C++, COBOL, FORTRAN, and Pascal.

Software Processes to Stop

Lists the software processes that must be stopped before installing the software product. Also includes procedures for stopping software processes.

Note: For the installation of most software, it is recommended all processes be stopped. However, if it is not feasible for you to stop all processes, this section will help you identify only those processes that you *must* stop.

Special Installation Instructions

Lists any other special installation instructions for the software product.

Approximate Disk Space Required (in megabytes)

Lists in megabytes the approximate amount of hard disk space required to store the software after it is installed.

Special Hardware Required

Lists the special hardware that is required to use the software product. The hardware must be installed before software installation.

Understanding Option Names

Software product options are separate, installable units that can operate independently from other options of the product. Some software product options can also be accessed independently from other options.

Software product options are named according to the following conventions:

- The first part of the name is an abbreviation of the software product name. It corresponds to a directory under **/usr/lpp**.
- The rest of the option name consists of standardized extensions, listed in sequence, and separated by a period. These extensions represent the type of option. Some of the common extensions are as follows:

| | |
|-------------|--|
| all | Choosing this extension installs <i>all</i> of the options for the software product. |
| data | The shared part of the software product. This usually must be installed with the .obj portion of the product. |
| fnt | Printer fonts for that product. |
| info | Databases containing documentation for that product that is accessible through InfoExplorer. |
| msg | System message catalogs. |
| obj | The executable code for the software product. Contains the /usr and / (root) parts of the product. |

List of Optional Software Products

Optional software products include those that are purchased separately as well as those that are shipped with the current release of AIX Version 3.2. Each software product can contain a variety of separately installable options.

This chapter contains installation information for the following optional software products.

Version 3.2 Software Products

| | |
|--|-------|
| Base Operating System (BOS) Data | 17-6 |
| Base System Locales | 17-7 |
| Base System Messages | 17-9 |
| InfoExplorer Databases | 17-10 |
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| BOS Extensions 1 (BOSEXT1) | 17-15 |
| BOS Extensions 2 (BOSEXT2) | 17-17 |
| Base Operating System Network Facilities (BOSNET) | 17-20 |
| Text Formatting Services | 17-22 |
| High Availability for Network File Systems (HANFS) | 17-24 |
| Data Encryption Standards Library Routines (U.S. only) | 17-25 |
| Extended License Information Package | 17-26 |
| DOS Server | 17-27 |
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| Fiber Distributed Data Interface (FDDI) | 17-29 |
| Block Multiplexer Channel Connectivity | 17-30 |

Separately Purchased Software Products

| | |
|---|-------|
| AIXwindows (Version 1.2.4.0) | 17-31 |
| AIXwindows (Version 1.2.2.0) | 17-35 |
| AIXwindows Graphics | 17-39 |
| AIXwindows Interface Composer (Version 1.1.1) | 17-45 |
| AIXwindows Interface Composer (Version 1.2) | 17-46 |
| VS COBOL Compiler | 17-47 |
| VS COBOL Run Time Environment | 17-48 |
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| 3270 Host Connection Program | 17-50 |
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| Computer Graphics Interface Toolkit | 17-62 |
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| | |
|---|-------|
| XL FORTRAN Compiler | 17-67 |
| XL FORTRAN Run Time Environment | 17-68 |
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| XL Pascal Run Time Environment | 17-70 |
| Ada Compiler | 17-71 |
| Ada Run Time Environment | 17-73 |
| Distributed Computing Environment (DCE) | 17-74 |
| Encina Installation Information | 17-77 |
| Engineering and Scientific Subroutine Library (ESSL) | 17-80 |
| Open Systems Interconnection Messaging and Filing (OSIMF) | 17-81 |
| XL C++ Compiler | 17-82 |
| Enterprise Systems Connection (ESCON) | 17-83 |

Base Operating System (BOS) Data

Product Description

The Version 3.2 Base Operating System (BOS) data files such as **terminfo**.

Option Names

Base Operating System Data (**bos.data**)

This option contains data files needed by **bos.obj** such as the **terminfo** files. This option also sets up the directories needed by InfoExplorer and the **man** command. It is strongly recommended that this option be installed when you install **bos.obj**, because **bos.obj** only supports the following terminal types without **bos.data** installed:

| | |
|-------------|-----------|
| ibm5081 | vt100 |
| hft | vt100-nam |
| ibm3151 | vt100x |
| ibm3161 | ibm5550 |
| ibm3163 | ibm5570 |
| ibm3164 | vt220 |
| wy60-316X | vt320 |
| wyse60-316X | vt330 |

This option contains the following subsystems:

- InfoExplorer Databases
- Mail Data
- Terminal Capabilities Database

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---------------------------------------|
| bos.data | bos.obj | AIX Version 3.2 Base Operating System |

Approximate Disk Space Required (in megabytes)

| | |
|--|--|
| Base Operating System (BOS) RunTime | 108.0 (plus paging, if paging needs exceed 32 megabytes) |
| Shareable Portion of BOS (bos.data) | 1.0 |

Base System Locales

Product Description

The Base System Locales define the language environments that are desired on the system. The locale package also provides keyboard maps and fonts. Version 3.2 includes support for multiple code sets that meet international standards, as well as supporting the code set used in previous releases. During installation of the Version 3.2 Base Operating System (BOS), support for the appropriate code sets is automatically installed. However, the system defaults to the code set of the previous releases. The option names that follow include industry standard (ISO8859, EUC [Extended Unix Codeset]) code sets and the previously released code sets (IBM-850, IBM-932). Select one option for each language environment on your system. For example, to install both the IBM-850 locale and the ISO locale for French in France, select **bsl.fr_FR**. To select, for example, just the IBM-850 locale for France, select **bsl.fr_FR.pc**.

Option Names

Base System Locales:

| | |
|-----------------|--------------------|
| Danish | ISO8859-1 code set |
| Danish | IBM-850 code set |
| Swiss German | ISO8859-1 code set |
| Swiss German | IBM-850 code set |
| German | ISO8859-1 code set |
| German | IBM-850 code set |
| Greek | ISO8859-7 code set |
| U.K. English | ISO8859-1 code set |
| U.K. English | IBM-850 code set |
| U.S. English | ISO8859-1 code set |
| U.S. English | IBM-850 code set |
| Spanish | ISO8859-1 code set |
| Spanish | IBM-850 code set |
| Finnish | ISO8859-1 code set |
| Finnish | IBM-850 code set |
| Belgian French | ISO8859-1 code set |
| Belgian French | IBM-850 code set |
| Canadian French | ISO8859-1 code set |
| Canadian French | IBM-850 code set |
| French | ISO8859-1 code set |
| French | IBM-850 code set |
| Swiss French | ISO8859-1 code set |
| Swiss French | IBM-850 code set |
| Icelandic | ISO8859-1 code set |
| Icelandic | IBM-850 code set |

| | |
|---|--------------------|
| Italian | ISO8859-1 code set |
| Italian | IBM-850 code set |
| Japanese | IBM-eucJP code set |
| (Selection installs en_JP.ISO8859-1 – Japanese English) | |
| Japanese | IBM-932 code set |
| (Selection installs en_JP.IBM-850 – Japanese English) | |
| Japanese Character Support | |
| Korean | IBM-eucKR code set |
| Belgian Dutch | ISO8859-1 code set |
| Belgian Dutch | IBM-850 code set |
| Netherlands Dutch | ISO8859-1 code set |
| Netherlands Dutch | IBM-850 code set |
| Norwegian | ISO8859-1 code set |
| Norwegian | IBM-850 code set |
| Portuguese | ISO8859-1 code set |
| Portuguese | IBM-850 code set |
| Swedish | ISO8859-1 code set |
| Swedish | IBM-850 code set |
| Turkish | ISO8859-9 code set |
| Chinese (traditional) | IBM-eucTW code set |
| 3.1 Input Keymaps | |
| HFT Greek Font Library | |
| HFT Latin-1 Font Library | |
| HFT Turkish Font Library | |

Approximate Disk Space Required (in megabytes)

| | |
|--------------------------|------|
| Language locales (total) | 18.0 |
|--------------------------|------|

Base System Messages

Product Description

Contains system messages in the language you specify for BOS Version 3.2.

Option Names

Base System Messages:

German

U.S. English

Spanish

French

Italian

Japanese

Dutch (Belgium)

Norwegian

Swedish

Korean

Chinese (Traditional)

Approximate Disk Space Required (in megabytes)

The following disk space requirements are for a language installed as the primary language. A language installed as a secondary language requires from 0.1MB to 0.2MB less disk space.

| | |
|-----------------------|--|
| German | 5.2 |
| English | 4.6 |
| Spanish | 5.2 |
| French | 7.4 (includes translated manual pages) |
| Italian | 5.2 |
| Japanese | 4.9 |
| Dutch (Belgium) | 5.0 |
| Norwegian | 4.9 |
| Swedish | 4.9 |
| Korean | 4.3 |
| Chinese (Traditional) | 4.0 |

InfoExplorer Databases

Product Description

The InfoExplorer databases you choose to install are accessed with the InfoExplorer retrieval tool installed with your AIX Version 3.2 Base Operating System (BOS). These databases contain online hypertext documentation for BOS and your other licensed programs. The option names listed below are shipped with the AIX Version 3.2 BOS. Some other software products have separately installable databases containing documentation for those products.

Note: In order for InfoExplorer to properly display information in an AIXwindows environment, the AIXwindows Run Time Environment option (**X11rte.obj**) and the AIXwindows Core X11 Font option (**X11fnt.coreX.fnt**) must be installed. For more information, refer to "AIXwindows Environment" on page 17-31.

Option Names

Base System Standard Information (bssiEN_US.info)

Note: If you ordered a preinstalled system, this option was not installed.

This option contains the following online documentation:

- Task Index
- Commands List
- Book List
- Messages Index
- Online Help Information
- Information for daily system users
- Information for system managers

Base System Programming Information (bspiEN_US.info)

This option contains the following online documentation for programmers:

- XL C Compiler
- Information for programming the Base Operating System, communications, and devices tools.

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---|
| bssiEN_US.info | bos.data | Base System Standard Information |
| | X11rte.obj | AIXwindows Run Time Environment (required in an AIXwindows environment) |
| | X11fnt.coreX.fnt | AIXwindows Core X11 Fonts (required in an AIXwindows environment) |
| bspiEN_US.info | bssiEN_US.info | Base System Programming Information |

Special Installation Instructions

If you ordered InfoExplorer in any other languages besides English, be sure you install your primary language first.

InfoExplorer databases cannot be installed on an Xstation 120.

Approximate Disk Space Required (in megabytes)

| | |
|-------------------------------------|------|
| Base System Standard Information | 48.4 |
| Base System Programming Information | 40.2 |

INed Editor

Product Description

INed is a full-screen text editor that allows you to view, enter, and revise text at any location in the editor window.

Option Names

INed Editor

INed.obj

This option contains the following subsystem:

INed Text Editor

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| INed.obj | bsmLanguage.msg , where <i>Language</i> is the abbreviation for your language | Base System Messages option for your primary language |

Approximate Disk Space Required (in megabytes)

INed Editor

1.3

Base Application Development Toolkit

Product Description

The Base Application Development Toolkit contains commands, files, and libraries required to develop software applications.

Option Names

There are two install images, a usr install (**bosadt.obj**) and a shared install (**bosadt.data**).

Base Application Development Toolkit

(**bosadt.bosadt.obj**)

This option consists of miscellaneous programs for coding, debugging, and source control, and contains help files for the **SCCS** Commands.

This option contains the following subsystems:

- XCOFF File Management Utilities
- Assembler Utilities
- The **bs** Program
- C Language Source Utilities
- Data Encryption Utilities
- FORTTRAN Language Utilities
- The **lint** Program
- The **make** Program
- Locale Management Utilities
- BSD Message String Utilities
- Program Debug Utilities
- DOS Device Merge Utility
- The **lex** program
- Source Code Control (sccs) Utilities
- The **snobol** Program
- The **yacc** Program

Base Application Development Toolkit

(**bosadt.bosadt.data**)

This option contains help information for the **SCCS** commands and contains the following subsystem:

- Help Database

Base Development Libraries and Include Files

(**bosadt.lib.obj**)

This option contains the include files and miscellaneous libraries not needed by the base system. They are needed in order to compile applications that include standard headers.

This option contains the following subsystems:

- BOS Programming Examples
- BSD System Administration Help
- HFT Programming Examples
- Include Files
- Linear Algebra Math Library
- BSD Services Library
- Linker Library

Tektronix Terminal Plotting Library
The **lint** Program Rules Databases
SMIT Programming Examples

Base Profiling Support (bosadt.prof.obj)

This option contains the following subsystem:

Performance Profiling Utilities

AIXwindows Development Environment (XDE) (bosadt.xde.obj)

This option is an interactive, multiwindow environment for debugging. XDE only runs on AIXwindows.

This option contains the following subsystem:

The **xde** Program Debugger

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--------------------------------------|
| bosadt.xde.obj | bosadt.bosadt.obj | Base Application Development Toolkit |

Special Installation Instructions

Warning: For compatibility, symbolic links to the **/etc** directory are created for several files. This may cause the directory to be extended. Before installing be sure that the **/** (root) file system is not full.

Approximate Disk Space Required (in megabytes)

| | |
|--|-----|
| Application Development Toolkit | 4.3 |
| Shareable portion of Application Development Toolkit | 0.2 |
| SCCS Command Help Information | |
| Base Development Includes and Libraries | 7.5 |
| Base Profiling Support | 2.1 |
| X-Development Environment (xde) | 0.3 |

BOS Extensions 1 (BOSEXT1)

Product Description

This software product contains a variety of options that support or enhance the Base Operating System. This is a collection of optional software that is not needed by **bos.obj** but may be required by other software products.

Option Names

C Shell (bosext1.csh.obj)

This option is the command line interpreter from the BSD 4.3 operating system. It is recommended that this option be installed for users that are familiar with the BSD operating system.

This option contains the following subsystem:

The C Shell

Remote Customer Services (bosext1.ecs.obj)

This option provides an integrated approach to diagnosing and correcting hardware and software problems and an interface that supports the following:

- Connecting to the Information Network
- Maintaining profiles
- Performing problem determination
- Reviewing system information
- Preparing or reviewing problem descriptions

This option contains the following subsystem:

Electronic Customer Support

Extended Commands (bosext1.extcmds.obj)

This option is a collection of miscellaneous commands such as **axeb**, **ebxa**, **banner**, **bc**, **cal**, **calendar**, **dc**, and **factor**.

This option contains the following subsystems:

Calendar Utilities
Math Calculator Utilities
Miscellaneous Amusements
Character Set Conversion Utilities
Mail Convenience Utilities
The **man** Program
The **banner** and **yes** Programs
Performance Monitoring Utilities

Extended Commands (bosext1.extcmds.data)

This option is the shared data portion of **bosext1.extcmds.obj** software package.

This option contains the following subsystems:

Spelling Dictionary Data

The **man** Database
Terminal Tabs Database

Message Handler (bosext1.mh.obj)

This option enables you to create, distribute, receive, view, process, and store messages.

This option contains the following subsystem:

The **mh** Mail Program

Basic Networking Utilities (bosext1.uucp.obj)

This option is the UNIX-to-UNIX Copy Program (UUCP) that allows communication between UNIX systems over dial-up telephone lines, hard-wired communication lines, and TCP/IP.

This option contains the following subsystem:

The **uucp** Program and Utilities

CGI Device Drivers (bosext1.vdidd.obj)

This option is required to use the GSS graphics tool collection.

This option contains the following subsystem:

Video Capture Adapter Utilities

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|-----------------------------|
| bosext1.ecs.obj | bosext1.uucp.obj | Basic Networking Utilities |
| bosext1.extcmds.data | bos.data | Base Operating System (BOS) |

Special Installation Instructions

It is recommended that **bosext1.extcmds.data** be installed with **bosext1.extcmds.obj**.

Approximate Disk Space Required (in megabytes)

| | |
|--|-----|
| C Shell | 1.0 |
| Remote Customer Services | 1.3 |
| Extended Commands | 0.3 |
| Shareable Portion of Extended Commands | 0.4 |
| Mail Handler (MH) | 5.3 |
| UNIX-to-UNIX Copy Program (UUCP) | 1.3 |
| CGI Device Drivers | 2.3 |

Special Hardware Required

A modem is required for **bosext1.ecs.obj**.

BOS Extensions 2 (BOSEXT2)

Product Description

This software product contains a variety of options that support or enhance the Base Operating System. This is a collection of optional software that is not needed by **bos.obj**, but may be required by other software products.

Option Names

Accounting System (bosext2.acct.obj)

This option allows you to collect and report on individual and group use of various system resources and contains the following subsystem:

System Accounting Utilities

Asynchronous Terminal Emulation (bosext2.ate.obj)

This option is a menu-driven program that enables users to communicate between a workstation and a remote host. The workstation acts as a terminal connected to the remote host. With ATE, you can log in to a remote host, execute commands, and use files on that system as a local user. ATE allows you to transfer files between the workstation and the remote host through x-modem protocol. ATE also allows you to emulate the VT100 terminal.

This option contains the following subsystem:

Simple Terminal Emulator

IEEE Ethernet (802.3) Data Link Control (bosext2.dlc8023.obj)

This option provides full-duplex peer data transfer capabilities over an Ethernet Local Area Network. The IEEE 802.3 Ethernet Data Link Control uses the IEEE 802.3 CSMA/CD medium access control and a superset of the IEEE 802.2 logical link control-protocol.

This option contains the following subsystem:

8023 Data Link Control

Standard Ethernet Data Link Control (bosext2.dlcether.obj)

This option provides full-duplex peer data transfer capabilities over a Standard Ethernet Local Area Network, using the Xerox Ethernet CSMA/CD medium access control and a superset of the IEEE 802.2 logical link control-protocol.

This option contains the following subsystem:

Ethernet Data Link Control

Synchronous Data Link Control (SDLC) (bosext2.dlcsdlc.obj)

This option provides the access procedure for transparent and code-independent information interchange across teleprocessing and data networks.

This option contains the following subsystem:

SDLC Data Link Control

Qualified Logical Link Control (bosext2.dlcqlc.obj)

This option provides a half-duplex access procedure for attachment to X.25 packet-switching network. DLCQLLC provides full support for the 1980 and 1984 versions of the CCITT recommendation relevant to SNA-to-SNA connections. It allows point-to-point connections over an X.25 network between a pair of primary and secondary link stations.

This option contains the following subsystem:

QLLC Data Link Control

Token-Ring Data Link Control (bosext2.dlctoken.obj)

This option provides full-duplex peer transfer capabilities over a Token-Ring Local Area Network, using the Token-Ring IEEE 802.5 medium access control and a superset of the IEEE 802.2 logical link control-protocol.

This option contains the following subsystem:

Token Ring Data Link Control

DOS Utilities (bosext2.dosutil.obj)

This option contains the following subsystem for handling DOS diskettes:

DOS File and Disk Utilities

Games (bosext2.games.obj)

This option consists of games such as fish and hangman and contains the following subsystem:

Miscellaneous Amusements

X.25 commands (bosext2.x25app.obj)

This option contains the X25 commands, which allow use of the X.25 network without programming, and examples of X.25 applications. The following commands are included: **xcomms**, **xtalk**, **xmanage**, and **xmonitor**. The **xcomms** command invokes one of the X.25 commands. The **xtalk** command allows users to establish a session with other X.25 users, to transfer files, or to talk. The **xmanage** command displays status information for an X.25 port or manages the port's connections to the network. The **xmonitor** command monitors the activity on an X.25 port.

This option contains the following subsystem:

X25 Applications

Learn Command Lessons (bosext2.lrn.data)

This option contains the following subsystem:

Learn Utility Database

Software Processes to Stop

Warning: Be sure all activity has ceased before stopping the software.

The ATE software must be stopped before installing **bosext2.ate.obj** or updating it.

1. To determine if ATE is active, type `ps -e | grep ate` and press Enter.
If ATE is active, you will see a message similar to the following:

```
109      -1:41      ate
```

In this example, 109 is the Pid for ATE.

2. Enter the following to terminate ATE:

```
kill -9 Pid
```

where *Pid* is the process number ID on your system.

Special Installation Instructions

When applying updates to the **bosext2** package, an error message similar to the following will appear:

```
Cannot update traceid 240 to an earlier version. 1.3 vs 1.2.
```

Such an error message can be ignored during installation.

Approximate Disk Space Required (in megabytes)

| | |
|---|-----|
| Accounting Services | 1.0 |
| Asynchronous Terminal Emulation (ATE) | 0.2 |
| IEEE 802.3 Data Link Control | 0.6 |
| Standard Ethernet Data Link Control | 0.6 |
| SDLC Data Link Control | 0.3 |
| X.25 QLLC Data Link Control | 0.3 |
| Token-Ring Data Link Control | 0.3 |
| DOS Utilities | 0.4 |
| Games | 0.8 |
| X.25 Applications, API, and sample source | 0.5 |
| Learning BOS information | 2.9 |

Special Hardware Required

ATE supports direct (cabled) and modem communications. Local connections allow a maximum distance of 4000 feet (for RS-422A connections).

Base Operating System Network Facilities (BOSNET)

Product Description

The Base Operating System Network Facilities provides network support for the operating system. It includes TCP/IP, NFS, NCS, and an SNMP agent.

Option Names

Network Computing System (NCS) (bosnet.ncs.obj)

This option implements remote procedure calls. NCS is used to program distributed applications utilizing a client/server model.

This option contains the following subsystem:

Network Computing Services

Network File System/NIS/RPC Libraries and Facilities (bosnet.nfs.obj)

This option is a distributed file system that allows users to access files and directories located on remote computers and treat those files and directories as if they were local. Network Information Service (NIS) provides NFS with the information necessary for file sharing.

This option contains the following subsystems:

Network File System Client Utilities
Network File System Server Utilities
Network File System SMIT Utilities

Simple Network Management Protocol (SNMP) (bosnet.snmpd.obj)

This option provides SNMP agent functionality including SNMP request processing for MIBII variables and trap generation.

This option contains the following subsystem:

Simple Network Mail Protocol Daemon

Transmission Control Protocol/Internet Protocol (TCP/IP) (bosnet.tcpip.obj)

This option provides TCP/IP applications, including the daemons **inetd**, **rlogind**, **named**, **routed**, **gated**, **timed** and the user commands **rexec**, **rlogin**, **rsh**, **talk**, **telnet**, **ftp**, **tftp**, **rcp**, **arp**, **finger**, **host**, **hostid**, **hostname**, **ifconfig**, **netstat**, **ping**, **route**, **ruptime**, **rwho**, **setclock**, **trpt**, **htable**, **rdist**, **rdump**, **rmt**, **rrestore**, **timedc**, **whois**.

This option contains the following subsystems:

TCP/IP Client Utilities
TCP/IP Server Utilities
TCP/IP SMIT Utilities

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| bosnet.ncs.obj | bosnet.tcpip.obj | Transmission Control Protocol/ Internet Protocol (TCP/IP) |

| | | |
|-------------------------|-------------------------|--|
| bosnet.snmpd.obj | bosnet.tcpip.obj | Transmission Control Protocol/ Internet Protocol (TCP/IP) |
| bosnet.nfs.obj | bosnet.tcpip.obj | Transmission Control Protocol/ Internet Protocol (TCP/IP) |

Software Processes to Stop

Warning: Be sure all user activity has ceased before stopping processes.

Note: If you are installing onto a machine that will be a diskless server, you also must perform the following procedures on each of the diskless clients *of that server*.

For **bosnet.tcpip.obj**, all TCP/IP processes must be stopped with the following steps:

1. To determine if processes are active, type `lssrc -g tcpip` and press Enter.
2. If any TCP/IP processes are active, enter the following to terminate them:

```
stopsrc -g tcpip
```

For **bosnet.nfs.obj**, NFS processes must be stopped by performing the following steps:

1. To determine if any NFS processes are active, type the following and press Enter:

```
lssrc -a
```

2. If any NFS processes are active, enter the following to terminate them:

```
stopsrc -g nfs
```

```
stopsrc -g yp
```

```
stopsrc -g keyserver
```

```
stopsrc -g portmap
```

For **bosnet.snmpd.obj**, the SNMPD process must be stopped by performing the following steps:

1. To determine if the SNMPD process is active, type `lssrc -s snmpd` and press Enter.
2. If the SNMPD process is active, enter `stopsrc -s snmpd` to terminate it.

For **bosnet.ncs.obj**, all NCS processes must be stopped by performing the following steps:

1. To determine if any NCS processes are active, type `lssrc -g ncs` and press Enter.
2. If any NCS software processes are active, enter `stopsrc -g ncs` to terminate them.

Approximate Disk Space Required (in megabytes)

| | |
|--|-----|
| Network Computing System (NCS) | 1.1 |
| NFS/NIS/RPC Libraries and Utilities | 1.9 |
| Simple Network Management Protocol Agent | 3.7 |
| TCP/IP Applications | 3.8 |

Text Formatting Services

Product Description

The Text Formatting System provides services supporting the formatting and printing of a wide variety of documents, including business and technical reports, journal articles, books, and reports formatted for printers or photo-typesetters. The Text Formatting System consists of the familiar UNIX operating system NROFF and TROFF utilities and related commands supporting functions from the Documenter's Workbench Release 2.0 package, as well as enhancements and additional commands to provide 4.3 BSD functions.

Option Names

Included Subsystem

| | |
|---|--|
| Bibliography Support | (txtfmt.bib.obj) Text Formatting Bibliography Utilities |
| Shared data portion of Bibliography Support | (txtfmt.bib.data) Text Formatting Bibliography Utilities |
| Base Graphic Commands | (txtfmt.graf.obj) Tektronics Terminal Drivers |
| Writer's Tools | (txtfmt.spell.obj) Spell Checker Utilities |
| Shared data portion of Writer's Tools | (txtfmt.spell.data) Spell Checker Dictionaries |
| Text Formatting Services | (txtfmt.tfs.obj) Text Formatting Utilities |
| Shared data portion of Text Formatting Services | (txtfmt.tfs.data) Text Formatting Macros |
| TranScript Tools | (txtfmt.ts.obj) PostScript Formatter |
| Troff Xpreviewer | (txtfmt.xpv.obj) X Preview Utility |
| Fonts for Hewlett-Packard Laser Jet Printer | (txtfmt.hplj.fnt) HP LaserJet Fonts |
| Fonts for 3812 Printer | (txtfmt.ibm3812.fnt) IBM-3812 Fonts |
| Fonts for 3816 Printer | (txtfmt.ibm3816.fnt) IBM-3816 Fonts |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---|
| txtfmt.bib.obj | txtfmt.bib.data | The shared data portion of Bibliography Support |
| txtfmt.tfs.obj | txtfmt.tfs.data | The shared data portion of Text Formatting Services |
| txtfmt.spell.obj | txtfmt.tfs.obj txtfmt.spell.data | Text Formatting Services The shared data portion of Writer's Tools |
| txtfmt.hplj.fnt | txtfmt.tfs.obj | Text Formatting Services |

| | | |
|---------------------------|--------------------------------|--|
| txtfmt.ibm3812.fnt | txtfmt.tfs.obj | Text Formatting Services |
| txtfmt.ibm3816.fnt | txtfmt.tfs.obj | Text Formatting Services |
| txtfmt.xpv.obj | X11fnt.iso88591.aix.fnt | AIXwindows Latin 1 (ISO 8859-1) Fonts |
| | X11fnt.ibm850.pc.fnt | AIXwindows Latin 1 (IBM-850) Fonts |
| | X11fnt.coreX.fnt | AIXwindows Core X11 Fonts |
| txtfmt.ts.obj | txtfmt.tfs.obj | Text Formatting Services |

Special Installation Instructions

You do *not* have to shut down and reboot your system after installation in order to make this product available for use.

Approximate Disk Space Required (in megabytes)

| | |
|---|------|
| Bibliography Support | 0.2 |
| Shared Data Portion of Bibliography Support | 0.1 |
| Base Graphic Commands | 1.2 |
| Writers' Tools | 0.8 |
| Shared Data Portion of Writers' Tools | 0.2 |
| Formatting Services | 3.4 |
| Shared Data Portion of Formatting Services | 0.7 |
| TranScript Tools | 2.3 |
| Troff Xpreviewer | 0.6 |
| Fonts for HP Laserjet II | 3.6 |
| Fonts for 3812 Printer | 3.3 |
| Fonts for 3816 Printer | 3.01 |

High Availability for Network File Systems (HANFS)

Product Description

High Availability for Network File Systems (HANFS) provides enhanced availability of data beyond that provided by traditional Network File System (NFS) implementations.

Option Names

High Availability for Network File Systems (hanfs.obj)

This option contains the following subsystem:

High Availability Network File System

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| hanfs.obj | bosnet.tcpip.obj | Transmission Control Protocol/ Internet Protocol (TCP/IP) |
| | bosnet.nfs.obj | Network File System |

Software Processes to Stop

All NFS and HANFS software processes must be inactive.

Warning: Be sure that all user activity has ceased before stopping processes.

1. To determine if any NFS or HANFS software processes are active, type `lssrc -a` and press Enter.
2. If any NFS software processes are active, enter the following to terminate the software processes:

```
stopsrc -g nfs
stopsrc -g keyserv
stopsrc -g yp
stopsrc -s portmap
```

3. If any HANFS software processes are active, enter the following to terminate them:

```
stopsrc -g hanfs
```

Note: Before using the software, be sure to read the README file. This file contains up-to-date product information.

Approximate Disk Space Required (in megabytes)

High Availability for Network File Systems 0.5

Special Hardware Required

SCSI Adapters, part number 31G9722.

SCSI Adapter-to-Device Cables, part number 00G0959.

Data Encryption Standards Library Routines (U.S. only)

Product Description

Contains the Data Encryption Standards Library Routines (U.S. only). This component is installed for preinstalled systems that reside and remain in the United States only.

Option Names

Data Encryption Standards Library Routines (U.S. only) (des.obj).

Approximate Disk Space Required (in megabytes)

Data Encryption Standards Library Routines 0.1

Extended License Information Package

Product Description

The Extended License Information Package allows access to databases built by InfoCrafter.

Option Names

Extended License Information Package (infoxl.obj)

Approximate Disk Space Required (in megabytes)

License Extension 0.1

DOS Server

Product Description

DOS Server provides a means of exchanging files and accessing applications between a personal computer and the AIX family of operating systems.

Option Names

DOS Server (pci.obj)

This option is for use with the AIX Access for DOS Users.

Software Processes to Stop

Stop **pci.obj** before installing another version of the software.

The DOS Server must be stopped before installing a new version of DOS Server. This can be done manually using **/usr/pci/bin/pcistop**.

Special Installation Instructions

If you are installing **pci.obj** and plan to run the DOS Server over a network, you should install **bosnet.tcpip.obj**.

To start DOS Server after it is installed, type `sh /etc/rc.pci` and press Enter.

To start DOS Server every time your system is booted, take the following steps:

1. To change the rcpci entry in the **/etc/inittab** file, type the following and press Enter:

```
chitab "rcpci:2:wait:/etc/rc.pci > /dev/console 2>&1 # Start DOS
Server Daemons"
```

2. To verify the change, type the following and press Enter:

```
lsitab rcpci
```

The following message indicates that the change has been made:

```
rcpci:2:wait:/etc/rc.pci > /dev/console/ 2>&1 # Start DOS Server
Daemons
```

Approximate Disk Space Required (in megabytes)

DOS Server 1.0

Special Hardware Required

If you plan to run DOS Server over a network, you will need a Token-Ring or Ethernet adapter. For an RS-232 or RS-422 connection, you will need an RS-232 or RS-422 adapter, respectively.

XL C Compiler

Product Description

XL C Compiler is part of Version 3.2 and produces optimized object code that uses the system hardware.

Option Names

XL C Compiler (xlccmp.obj)

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| xlccmp.obj | bosadt.bosadt.obj | Base Application Development Toolkit |
| | bosadt.lib.obj | Base Development Libraries and Include Files |

Approximate Disk Space Required (in megabytes)

XL C Compiler 3.9

Fiber Distributed Data Interface (FDDI)

Product Description

The Fiber Distributed Data Interface (FDDI) provides support for the device driver layer for the FDDI protocol.

Option Names

FDDI operational microcode (fddi.obj)

This option contains the following subsystem:

FDDI

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|--|---|--|
| fddi.obj | fddi.mc | FDDI operational microcode |
| (If you want TCP/IP support, the following also is required) | | |
| | bosnet.tcpip.obj | Transmission Control Protocol/Internet Protocol (TCP/IP) |

Special Installation Instructions

To ensure full use of FDDI support, rebooting the machine after installation is required.

Approximate Disk Space Required (in megabytes)

FDDI operational microcode 0.3

FDDI device driver 0.5

Special Hardware Required

Software will not be useable without installation of supported FDDI cards.

Block Multiplexer Channel Connectivity

Product Description

The Block Multiplexer Channel Connectivity communication allows the system to communicate to an S/370 or S/390 host using the Block Multiplexer Channel. TCP/IP is supported and the TCP/IP Version 2.2 for VM (5735-FAL) is required at the host. This new enhancement allows the system to be used as a gateway between the S/370 VM host and the downstream network that consist of LAN or WAN. Therefore, distributed systems can access the VM resource, NFS, and the TCP/IP applications resident at the S/370 host.

Option Names

Device driver and necessary supporting data files (370p.obj)

Special Hardware Required

Block Multiplexer Channel Adapter #2755
Block Multiplexer Channel Adapter Cable #2758
Block Multiplexer Channel Adapter Assembly #2758

RAM Requirements (in megabytes)

Block Multiplexer Channel 0.3

AIXwindows (Version 1.2.4.0)

The AIXwindows environment is a collection of graphical user interfaces that provides the ability to develop and run advanced graphics applications, Enhanced Xwindows applications, and AIXwindows applications.

Run Time Environment

Option Names

AIXwindows Run Time Environment (RTE) (X11rte.obj)

This option contains the following subsystems:

- RTE Bitmaps
- RTE Programming Examples
- RTE Fonts
- RTE Locales
- RTE

AIXwindows Run Time Environment (RTE) Extensions (X11rte.ext.obj)

This option contains the following subsystems:

- X-Desktop Bitmaps
- Display PostScript Fonts
- Display PostScript Extensions
- RTE Extensions
- Font Utilities
- InfoExplorer
- Motif SMIT
- X-Desktop
- X Customize Utilities

Run Time Environment (RTE) Support for Motif 1.2 (X11rte.motif1.2.obj)

Development

Development Libraries and Include Files

(X11dev.obj)

This option contains the following subsystems:

- Motif Resource Manager
- Xaw Widgets
- Xm Widgets
- Xmu Widgets
- Development Bitmaps
- Development Commands
- Display PostScript
- Extensions
- User Interface Language (UIL)
- X-Display Manager Control Protocol (XDMCP)
- Server Extensions
- Fx
- Include Files

Development Sample Programs

(X11dev.src)

This option contains the following subsystems:

- Example Source Bitmaps
- Application Default Files
- Programming Examples
- Graphics Subroutine
- Xau Widgets

Development Libraries and Include Files for Motif 1.2

(X11dev.motif1.2.obj)

This option contains the following subsystems:

- Motif 1.2 Include Files
- Motif 1.2 Merge Utilities
- Motif 1.2 Resource Manager
- User Interface Language (UIL)

Development Sample Programs for Motif 1.2

(X11dev.motif1.2.src)

This option contains the following subsystem:

- Motif 1.2 Programming Examples

Development Sample Input Method Servers

(X11dev.im)

This option contains the following subsystem:

- Input Method Examples

Fonts

| | |
|---|---------------------------|
| Latin 1 (ISO8859-1) Fonts | (X11fnt.iso88591.aix.fnt) |
| This option contains the following subsystem: | ISO-8859-1 Fonts |
| Latin 2 (ISO8859-2) Fonts | (X11fnt.iso88592.fnt) |
| This option contains the following subsystem: | ISO-8859-2 Fonts |
| Latin 3 (ISO8859-3) Fonts | (X11fnt.iso88593.fnt) |
| This option contains the following subsystem: | ISO-8859-3 Fonts |
| Latin 4 (ISO8859-4) Fonts | (X11fnt.iso88594.fnt) |
| This option contains the following subsystem: | ISO-8859-4 Fonts |
| Cyrillic (ISO8859-5) Fonts | (X11fnt.iso88595.fnt) |
| This option contains the following subsystem: | ISO-8859-5 Fonts |
| Greek (ISO8859-7) Fonts | (X11fnt.iso88597.aix.fnt) |
| This option contains the following subsystem: | ISO-8859-7 Fonts |
| Turkish (ISO8859-9) Fonts | (X11fnt.iso88599.aix.fnt) |
| This option contains the following subsystem: | ISO-8859-9 Fonts |
| Latin 1 (IBM-850) Fonts | (X11fnt.ibm850.pc.fnt) |
| This option contains the following subsystem: | IBM PC-850 Fonts |
| Kanji Fonts | (X11fnt.kanji.aix.fnt) |
| This option contains the following subsystem: | PC-932 Fonts |
| Core X11 Fonts | (X11fnt.coreX.fnt) |
| This option contains the following subsystem: | Core X Fonts |
| MIT X11.3 contrib fonts | (X11fnt.oldX.fnt) |
| This option contains the following subsystem: | Old X Windows Fonts |

Messages

U.S. English

(X11mEn_US.msg)

This option contains the following subsystems:

- Bitmap Utility Messages
- Programming Examples Messages
- Font Utilities Messages
- Input Method Utility Messages
- InfoExplorer Messages
- Motif Window Manager Messages
- Motif Utility Messages
- Run Time Environment (RTE) Messages
- User Interface Language (UIL) Messages
- XDT Messages
- XM Messages

Documentation

AIXwindows Version 1.2.4.0 Documentation – U.S. English

(X11deviEn_US.info)

For more information concerning the AIXwindows environment installation, see page 17-41.

AIXwindows (Version 1.2.2.0)

The AIXwindows environment is a collection of graphical user interfaces that provides the ability to develop and run advanced graphics applications, Enhanced Xwindows applications, and AIXwindows applications.

Run Time Environment

Option Names

AIXwindows Run Time Environment (RTE)

(X11rte.obj)

This option contains the following subsystems:

- RTE Bitmaps
- RTE Programming Examples
- RTE Fonts
- RTE Locales
- RTE

AIXwindows Run Time Environment (RTE) Extensions

(X11rte.ext.obj)

This option contains the following subsystems:

- X-Desktop Bitmaps
- Display PostScript Fonts
- Display PostScript Extensions
- RTE Extensions
- Font Utilities
- InfoExplorer
- Motif SMIT
- X-Desktop
- X Customize Utilities

Development

Development Libraries and Include Files

(X11dev.obj)

This option contains the following subsystems:

- Motif Resource Manager
- Xaw Widgets
- Xm Widgets
- Xmu Widgets
- Development Bitmaps
- Development Commands
- Display PostScript
- Extensions
- User Interface Language (UIL)
- X-Display Manager Control Protocol (XDMCP)
- Server Extensions
- Fx
- Include Files

Development Sample Programs

(X11dev.src)

This option contains the following subsystems:

- Example Source Bitmaps
- Application Default Files
- Programming Examples
- Graphics Subroutine
- Xau Widgets

Fonts

| | |
|---|---------------------------|
| Latin 1 (ISO8859-1) Fonts | (X11fnt.iso88591.aix.fnt) |
| This option contains the following subsystem: | ISO-8859-1 Fonts |
| Latin 2 (ISO8859-2) Fonts | (X11fnt.iso88592.fnt) |
| This option contains the following subsystem: | ISO-8859-2 Fonts |
| Latin 3 (ISO8859-3) Fonts | (X11fnt.iso88593.fnt) |
| This option contains the following subsystem: | ISO-8859-3 Fonts |
| Latin 4 (ISO8859-4) Fonts | (X11fnt.iso88594.fnt) |
| This option contains the following subsystem: | ISO-8859-4 Fonts |
| Cyrillic (ISO8859-5) Fonts | (X11fnt.iso88595.fnt) |
| This option contains the following subsystem: | ISO-8859-5 Fonts |
| Greek (ISO8859-7) Fonts | (X11fnt.iso88597.aix.fnt) |
| This option contains the following subsystem: | ISO-8859-7 Fonts |
| Turkish (ISO8859-9) Fonts | (X11fnt.iso88599.aix.fnt) |
| This option contains the following subsystem: | ISO-8859-9 Fonts |
| Latin 1 (IBM-850) Fonts | (X11fnt.ibm850.pc.fnt) |
| This option contains the following subsystem: | IBM PC-850 Fonts |
| Kanji Fonts | (X11fnt.kanji.aix.fnt) |
| This option contains the following subsystem: | PC-932 Fonts |
| Core X11 Fonts | (X11fnt.coreX.fnt) |
| This option contains the following subsystem: | Core X Fonts |
| MIT X11.3 contrib fonts | (X11fnt.oldX.fnt) |
| This option contains the following subsystem: | Old X Windows Fonts |

Messages

U.S. English

(X11mEn_US.msg)

This option contains the following subsystems:

- Bitmap Utility Messages
- Font Utilities Messages
- Input Method Utility Messages
- InfoExplorer Messages
- Motif Window Manager Messages
- Runtime Environment (RTE) Messages
- User Interface Language (UIL) Messages
- X-Desktop Messages
- Xm Widget Messages

Dutch (Belgium)

(X11mNI_BE.msg)

French

(X11mFr_FR.msg)

German

(X11mDe_DE.msg)

Italian

(X11mlt_IT.msg)

Japanese

(X11mJa_JP.msg)

Korean

(X11mko_KR.msg)

Norwegian

(X11No_NO.msg)

Spanish

(X11Es_ES.msg)

Swedish

(X11Sv_Se.msg)

Chinese (Traditional)

(X11mzh_TW.msg)

These options each contain the following subsystems:

- Bitmap Utility Messages
- Font Utilities Messages
- Input Method Utility Messages
- InfoExplorer Messages
- Motif Window Manager Messages
- Runtime Environment (RTE) Messages
- User Interface Language (UIL) Messages
- X-Desktop Messages
- Xm Widget Messages

Documentation

AIXwindows Version 1.2.2.0 Documentation – U.S. English

(X11deviEn_US.info)

For more information concerning the AIXwindows environment installation, see page 17-41.

AIXwindows Graphics

3-D GAI load modules (X11_3d.obj)

Note: These load modules are needed to run GL, graPHIGS, and PEX on the Xserver.

This option contains the following subsystem:

graPHIGS Libraries

GL Run Time Environment (X11_3d.gl.rte.obj)

This option contains the following subsystem:

GL Runtime Environment

GL Development Utilities (X11_3d.gl.dev.obj)

This option contains the following subsystem:

GL Development Utilities

GL Development Sample Programs (X11_3d.gl.dev.src)

This option contains the following subsystems:

GL Demos

graPHIGS Development Utilities

graPHIGS Run Time Environment (X11_3d.graPHIGS.rte.obj)

This option contains the following subsystem:

graPHIGS Libraries

graPHIGS Calcomp/Versatec Plotter Support (X11_3d.graPHIGS.plot.obj)

This option contains the following subsystems:

graPHIGS PEX Programming
Examples

graPHIGS Kanji Fonts (X11_3d.graPHIGS.kanji.fnt)

This option contains the following subsystem:

graPHIGS Kanji Fonts

graPHIGS GKS Compatibility Option (X11_3d.graPHIGS.gks.obj)

This option contains the following subsystem:

graPHIGS Graphics Kernel Services

graPHIGS Remote Nucleus (X11_3d.graPHIGS.rnuc.obj)

This option contains the following subsystem:

graPHIGS PEX Programming Examples

graPHIGS Development Sample Programs (X11_3d.graPHIGS.dev.src)

This option contains the following subsystem:

graPHIGS Programming Examples

graPHIGS Development Tutorial

(X11_3d.graPHIGS.dev.obj)

This option contains the following subsystem:

graPHIGS Development Utilities

graPHIGS Extension to X (PEX)

(X11_3d.graPHIGS.pex.obj)

This option contains the following subsystem:

graPHIGS PEX Programming Examples

3D Documentation

AIXwindows/3D Documentation – U.S. English

(X11_3diEn_US.info)

AIXwindows Environment Installation Considerations

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| X11rte.obj | bos.obj bos.data | AIX Base Operating System AIX Base Operating System |
| X11rte.ext.obj | X11rte.obj | AIXwindows RTE* |
| X11dev.obj | X11rte.obj | AIXwindows RTE* |
| X11dev.src | X11dev.obj | AIXwindows Development Libraries and Include Files |
| X11fnt.iso88591.aix.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.iso88592.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.iso88593.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.iso88594.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.iso88595.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.iso88597.aix.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.iso88599.aix.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.ibm850.pc.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.kanji.aix.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.coreX.fnt | X11rte.obj | AIXwindows RTE* |
| X11fnt.oldX.fnt | X11rte.obj | AIXwindows RTE* |
| X11_3d.obj | X11rte.obj | AIXwindows RTE* |
| X11_3d.gl.rte.obj | X11_3d.obj | AIXwindows/3D Support |
| X11_3d.gl.dev.obj | X11_3d.gl.rte.obj | AIXwindows/3D GL RTE* |
| X11_3d.gl.dev.src | X11_3d.gl.dev.obj | AIXwindows/3D GL Development Utilities |
| X11_3d.graPHIGS.rte.obj | X11_3d.obj | AIXwindows/3D Support |
| X11_3d.graPHIGS.kanji.fnt | X11_3d.graPHIGS.rte.obj | AIXwindows/3D graPHIGS RTE* |
| X11_3d.graPHIGS.gks.obj | X11_3d.graPHIGS.rte.obj | AIXwindows/3D graPHIGS RTE* |
| X11_3d.graPHIGS.rnuc.obj | X11_3d.graPHIGS.rte.obj | AIXwindows/3D graPHIGS RTE* |
| X11_3d.graPHIGS.dev.src | X11_3d.graPHIGS.rte.obj | AIXwindows/3D graPHIGS RTE* |
| X11_3d.graPHIGS.dev.obj | X11_3d.graPHIGS.rte.obj | AIXwindows/3D graPHIGS RTE* |
| X11_3d.graPHIGS.pex.obj | X11_3d.obj | AIXwindows/3D Support |
| X11_3diEn_US.info | bssiEN_US.info | Base System Standard Information – U.S. English |
| X11mEn_US.msg | X11rte.obj | AIXwindows RTE* |

*Run Time Environment

Software Processes to Stop

- Previous versions of AIXwindows must be stopped before installing later versions of the software.
- Before installing or applying an update to X11rte (**X11rte.obj** or **X11rte.ext.obj**), the **infod** daemon and the Xserver should be stopped.

To stop the **infod** daemon, first login as root.

Type the following:

```
stopsrc -s infod
```

and press Enter.

To stop the X server, simultaneously press the Ctrl, Alt, and Backspace keys.

Special Installation Instructions

To verify that the Personal graPHIGS API has been successfully installed:

1. Start AIXwindows
2. Change to the **/usr/lpp/grAPHIGS/etc** directory.
3. Run the **runivp** script.
4. A wire frame robot arm appears in a window. To test the corresponding function:
 - a. Press the PF1 key to initiate motion in the robot arm.
 - b. Press the PF4 key to exit the program before arm motion has stopped.
 - c. Press any PF key to exit the program after arm motion has stopped.

When you select the **X11_3d.grAPHIGS.rnuc.obj lpp** option, a system file required for remote graPHIGS nucleus support over a network is modified and the necessary files are installed. The **/etc/services** file will contain the base port number used by remote graPHIGS nuclei. The default base port number is 8000.

Note: If this port number is reserved for another purpose in the **/etc/services** file, a warning will be issued. The **/etc/services** file will not be modified to reserve port 8000. The default base port number will remain 8000 until modified in **/etc/services**.

To change the base port number, append or change the line like the following example:

```
grAPHIGS      8000/tcp
```

To change the base port number, modify as follows:

```
grAPHIGS      9000/tcp
```

Note: In order for remote graPHIGS nucleus support to work over a network, the computers using remote graPHIGS nuclei have the same base port number.

The four script files **gPINIT**, **gPterm**, **gPhost**, and **gPq**, are installed in the **/usr/lpp/grAPHIGS/bin** directory and in **/usr/bin**. The **gPterm** script is used to terminate the remote graPHIGS nucleus. The **gPhost** script is used to add or delete host names with access to the remote nucleus. The **gPq** script is used to view the status of remote graPHIGS nuclei.

Note on static extensions linked into the Xserver:

Any extensions that have been linked in as part of the Xserver (`/usr/lpp/X11/bin/X`) will be lost during an installation or update of **X11rte.obj**. This is because the X server is relinked (recreated) during the installation/update process from the `/usr/lpp/X11/bin/X.o` archive. (This archive contains the component object modules that constitute the X server.) A loss will occur even if an update to **X11rte.obj** is applied and later rejected. To recover lost extensions, relink them with the new **X.o** to create a new X server.

Note on installing 3.1 X client applications on Version 3.2:

If an X client application, designed to install and run on Version 3.1 (and thus AIXwindows 1.1), is to be installed on Version 3.2 (and thus AIXwindows 1.2), it may be necessary to run the X installation preparation script beforehand and afterwards. This script, `/usr/lpp/X11rte/xip`, will save (temporarily rename) the shared X client-side libraries and replace them with 3.1 versions suitable for linking with 3.1 X client applications. After the 3.1 X client application installation has completed, the script should be rerun to remove the temporary 3.1 versions of the libraries and restore the saved (renamed) versions, which are suitable for running 3.1 and 3.2 X clients (as well as for linking with 3.2 X clients.)

If you are unsure if a 3.1 X client has linked at install time, then `xip` should be run. It requires just over 2.5 megabytes free in the `/usr` file system to save the 3.2 versions of the shared X client-side libraries. Before the 3.1 X client application is installed, the root user executes:

```
/usr/lpp/X11rte/xip -b
```

and after the 3.1 X client application installation completes, the root user executes:

```
/usr/lpp/X11rte/xip -a
```

Approximate Disk Space Required (in megabytes)

| AIXwindows | 1.2.2.0 | 1.2.4.0 |
|---|----------------|------------------|
| AIXwindows Run Time Environment | 10.5 | 14.5 |
| AIXwindows Run Time Environment Extensions | 21.1 | 20.8 |
| AIXwindows Run Time Environment Support for Motif 1.2 | | 3.7 |
| AIXwindows Development Fonts | 6.5 | |
| AIXwindows Libraries and Include Files | 5.7 | 5.7 |
| AIXwindows Sample Programs | 16.3 | 25.8 |
| AIXwindows Libraries and Include Files for Motif 1.2 | | 9.1 |
| AIXwindows Sample Programs for Motif 1. | | 2.2 |
| AIXwindows Fonts (total) | 16.3 | 25.9 |
| AIXwindows Messages/Help Text | 0.4 | 0.5 per language |
| AIXwindows Programming Documentation | 28.6 | |

AIXwindows Graphics and 3D Documentation (Version 1.2.2.0 and Version 1.2.4.0)

| | |
|---|-----|
| AIXwindows 3D Support | 4.9 |
| AIXwindows GL Run Time Environment | 1.0 |
| AIXwindows GL Development Utilities | 0.6 |
| AIXwindows GL Development Sample Programs | 0.6 |
| AIXwindows Personal graPHIGS Run Time Environment | 6.4 |

| | |
|--|------|
| AIXwindows Personal graPHIGS Plotter Support | 2.6 |
| AIXwindows Personal graPHIGS KJ Fonts | 0.8 |
| AIXwindows Personal graPHIGS GLS Compatibility | 0.7 |
| AIXwindows Personal graPHIGS Remote Nucleus | 0.3 |
| AIXwindows Personal graPHIGS Sample Programs | 1.7 |
| AIXwindows Personal graPHIGS Tutorial | 4.0 |
| AIXwindows PHIGS Extension to X (PEX) | 4.4 |
| AIXwindows Graphics Documentation | 18.6 |

AIXwindows Interface Composer (Version 1.1.1)

Product Description

AIXwindows Interface Composer (AIC) Version 1.1.1 is a software development tool that assists the developer in the designing of graphical user interfaces (GUIs) for applications, and automatically generates the C source code for the user interface. It is designed to assist the developer in the generation of OSF/Motif 1.1 code. The developer uses direct manipulation of the user interface components to lay out the GUI. AIC manages the user interface code and allows the developer to perform prototyping and modification of the user interface.

Option Names

| | |
|-------------------------------------|-----------------|
| AIXwindows Interface Composer | (aic.obj) |
| English Message Catalog | (aicmEn_US.msg) |
| French Message Catalog | (aicmFr_FR.msg) |
| Spanish Message Catalog | (aicmEs_ES.msg) |
| Netherlands/Belgium Message Catalog | (aicmNI_BE.msg) |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| aic.obj | bosadt.bosadt.obj | Base Application Development Toolkit |
| | bosadt.lib.obj | Base Development Libraries and Include Files |
| | X11dev.obj | AIXwindows Development Libraries and Include Files |
| | X11fnt.coreX.fnt | AIXwindows Core X11 Fonts (MIT X11.4 75 dpi and 100 dpi fonts) |
| | X11fnt.oldX.fnt | MIT X11.3 contrib fonts: bmug, info-mac, oldx10, and oldx11 |
| | X11rte.obj | AIXwindows Run Time Environment |
| | xlccmp.obj | AIX XL C Compiler |

Approximate Disk Space Required (in megabytes)

| | |
|-------------------------------|------|
| AIXwindows Interface Composer | 18.1 |
| Messages/Help Text | 0.2 |

AIXwindows Interface Composer (Version 1.2)

Product Description

AIXwindows Interface Composer/6000 Version 1.2 is a graphical user interface (GUI) development tool that provides assistance to the software developer in the design and development of GUIs for applications using OSF/Motif 1.2. The developer uses direct manipulation of the user interface components to lay out the GUI, and the C code for the interface is generated automatically. In addition, the developer can link in code and test the behavior of the interface via a built-in C interpreter. AIC 1.2 provides full multi-byte character support and C++ code generation capability.

Option Names

| | |
|-------------------------------------|-------------------|
| AIXwindows Interface Composer | (aic12.obj) |
| English Message Catalog | (aicmEn_US12.msg) |
| French Message Catalog | (aicmFr_FR12.msg) |
| Spanish Message Catalog | (aicmEs_ES12.msg) |
| Netherlands/Belgium Message Catalog | (aicmNI_BE12.msg) |
| Japanese Message Catalog | (aicmja_JP12.msg) |
| Korean Message Catalog | (aicmko_KR12.msg) |
| Traditional Chinese Message Catalog | (aicmzh_TW12.msg) |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| aic12.obj | bosadt.bosadt.obj | Base Application Development Toolkit |
| | bosadt.lib.obj | Base Development Libraries and Include Files |
| | X11dev.obj | AIXwindows Development Libraries and Include Files |
| | X11fnt.coreX.fnt | AIXwindows Core X11 Fonts (MIT X11.4 75 dpi and 100 dpi fonts) |
| | X11fnt.oldX.fnt | MIT X11.3 contrib fonts: bmug, info-mac, oldx10, and oldx11 |
| | X11rte.obj | AIXwindows Run Time Environment |
| | xlccmp.obj | AIX XL C Compiler |
| | X11rte.motif1.2.obj | Motif 1.2 Libraries |
| | X11dev.motif1.2.obj | Motif 1.2 Libraries |

Approximate Disk Space Required (in megabytes)

| | |
|-------------------------------|------|
| AIXwindows Interface Composer | 22.0 |
| Messages/Help Text | 0.2 |

VS COBOL Compiler

Product Description

VS COBOL Compiler contains a Micro Focus-developed front end and a native code generator. The compiler aids the development and maintenance of COBOL applications targeted for compilation and execution on System/370 host mainframes in the VM/CMS and MVS operating environments. The compiler allows COBOL programs to run by being interpreted, dynamically loaded, or statically linked.

Option Names

VS COBOL Compiler (cobolcmp.obj)

Software Processes to Stop

Stop **cobolcmp.obj** before installing another version of the software.

Special Installation Instructions

It is recommended that you install **bosadt.bosadt.obj** and **cobolcmp.obj** concurrently.

Warning: For updating VS COBOL Compiler: As stated in the VS COBOL Compiler Installation Kit, the VS COBOL Compiler includes the VS COBOL Run Time Environment. Do *not* apply a VS COBOL Run Time Environment (**cobolrte.obj**) update if you have an active update for the compiler. This would cause the loss of the files from the last committed version. You can find out if there is an uncommitted update (that is, ACTIVE APPLY) by entering `lslpp -h cobolcmp.obj` with an output similar to the following example:

| <u>Option Name</u> | <u>State</u> | <u>Event</u> | <u>Date/Time</u> | <u>Release</u> | <u>User Name</u> |
|--------------------|--------------|--------------|------------------|-----------------|------------------|
| cobolcmp.obj | ACTIVE | APPLY | 11/08/91 | 01.01.0008.0005 | root |
| | PENDING | COMMIT | 11/08/91 | 01.01.0000.0000 | root |

Approximate Disk Space Required (in megabytes)

VS COBOL Compiler 5.3

VS COBOL Run Time Environment

Product Description

VS COBOL Run Time Environment contains the necessary COBOL components to execute applications developed with the VS COBOL Compiler on another system.

Option Names

VS COBOL Run Time Environment (cobolrte.obj)

VS COBOL Run Time Environment Messages:

| | |
|-----------------|----------------------|
| U.S. English | (cobolrtemEn_US.msg) |
| Canadian French | (cobolrtemFr_CF.msg) |
| French | (cobolrtemFr_FR.msg) |
| Japanese | (cobolrtemJp_JP.msg) |
| Spanish | (cobolrtemSp_SP.msg) |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|------------------------|
| cobolrte.obj | cobolcmp.obj | VS COBOL Compiler/6000 |

Software Processes to Stop

Stop **cobolrte.obj** before installing another version of the software.

Approximate Disk Space Required (in megabytes)

| | |
|-------------------------------|--------------------|
| VS COBOL Run Time Environment | 1.9 |
| Messages/Help Text | 0.1 (per language) |

3278/79 Emulation

Product Description

3278/79 Emulation (em78) provides an emulator that allows your system to attach to a 3274/3174 control unit and emulate a 3278/79 display in CUT mode. Programs are supplied that allow you to transfer files between the operating system and the host. The emulator's keyboard mapping, color, and field attributes can be customized.

Option Names

3278/79 Emulator (em78em78.obj)

3278/79 Emulator Messages:

| | |
|---------------|------------------|
| U.S. English | (em78em78.obj) |
| Belgian/Dutch | (em78mNI_BE.msg) |
| French | (em78mFr_FR.msg) |
| German | (em78mDeDE.msg) |
| Italian | (em78mlt_IT.msg) |
| Spanish | (em78mEs_ES.msg) |
| Swedish | (em78mSv_SE.msg) |

Software Processes to Stop

Ensure that the em78 emulator is not running. If it is, log off or disconnect from the host and then enter the sequence Control-D Control-D to exit the program.

Special Installation Instructions

After the 3278/79 Emulation package has been installed on your system, you must configure it for the language you wish to use. Run the following command to configure the emulator:

```
emconfig
```

Approximate Disk Space Required (in megabytes)

| | |
|--------------------|--------------------|
| 3278/79 Emulation | 1.9 |
| Messages/Help Text | 0.1 (per language) |

Special Hardware Required

To run em78, you will need a 3270 Connection Adapter.

3270 Host Connection Program

Product Description

3270 Host Connection Program (HCON) provides the ability to emulate a terminal or printer attached to a System/370 computer over any of the following connections:

| | |
|--------------|-------------------------------|
| DFT non-SNA | (terminal or LU1/LU3 printer) |
| DFT SNA | (terminal only) |
| HIA | (terminal only) |
| TCP/IP | (terminal only) |
| SNA Services | (terminal or LU1/LU3 printer) |

Multiple emulator sessions can be run concurrently, on either HFT or ASCII terminals. HCON provides programs to transfer files between the operating system and the host. An Application Programming Interface allows user programs to control the emulator's presentation space. The Autolog feature allows for automatic logging in and logging off to the host system. A menu-driven utility program is provided to let you change the keyboard, color, and field attribute mappings, transfer files, or use the Autolog programs.

Option Names

3270 Host Connection Program (HCON) (hcon.obj)

3270 Host Connection Program Messages:

| | |
|---------------|------------------|
| U.S. English | (hconmEn_US.msg) |
| Belgian/Dutch | (hconmNI_BE.msg) |
| French | (hconmFr_FR.msg) |
| German | (hconmDe_DE.msg) |
| Italian | (hconmlt_IT.msg) |
| Japanese | (hconmJp_JP.msg) |
| Spanish | (hconmEs_ES.msg) |
| Swedish | (hconmSv_SE.msg) |

Software Processes to Stop

Ensure that no HCON emulator sessions are running. If any emulator sessions are running, exit each session by doing the following:

- Log off or disconnect from the host.
- Enter the key sequence Ctrl-D twice.

Special Installation Instructions

If you are installing the 3270 Host Connection Program in a client/server environment using the **instclient** command, you will need to ensure that the **HCON** daemon is running on any client on which you want to run **HCON**. This is done after installation either by rebooting the client machines or by invoking the following commands on each client:

If HCON was previously installed on the client, make sure the old daemon is stopped by entering the following command:

```
stopsrc -cs hcon
```

Start the daemon by entering the following command:

```
startsrc -s hcon
```

If you are not installing HCON in a client/server environment, the installation process will start the daemon for you.

After the 3270 Host Connection Program has been installed on your system, you must add the names of the users and their session profiles to the database. This is required before you can run the HCON emulator. To add users and create session profiles, type the following command:

```
smit hcon
```

The menus for adding and removing users are under the heading HCON Administrator Functions. The menus for creating session profiles are under the heading HCON User Functions.

If HCON will be connected to the host using the SNA Services product, **sna.sna.obj** must be installed and configured before running HCON. **sna.sna.obj** is *not* required for DFT non-SNA, DFT SNA, HIA, or TCP/IP connections.

If HCON will be connected to the host using TCP/IP, **bosnet.tcpip.obj** must be installed before running HCON. **bosnet.tcpip.obj** is *not* required for DFT non-SNA, DFT SNA, HIA, or SNA Services connections.

Approximate Disk Space Required (in megabytes)

| | |
|------------------------------|--------------------|
| 3270 Host Connection Program | 4.1 |
| Messages/Help Text | 0.3 (per language) |

Special Hardware Required

For DFT connections, you will need a 3270 Connection Adapter.

For HIA connections, you will need a System/370 Host Interface Adapter (HIA).

For SNA Services connections, see the SNA Services section of this chapter for the list of required hardware.

InfoCrafter

Product Description

InfoCrafter allows users to develop and compile hypertext databases in a form suitable for search and display using InfoExplorer hypertext retrieval system. Databases can be compiled from customized source documents created with Interleaf 5, FrameMaker 3.0, or from ASCII documents marked up with a customized tag set.

Option Names

The executables and necessary supporting data files (icraft.obj)

This option contains the following subsystems:

InfoCrafter
Programming Examples

System messages in U.S. English (icraftmEn_US.msg)

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---|
| icraft.obj | infoxl.obj | Extended License Information Package must be installed on the system on which you intend to view your database. |

Special Installation Instructions

After installing InfoCrafter, copy the C shell or Bourne shell setup script (the **setup.csh** or **setup.sh** files, respectively) from the **/usr/lpp/icraft/bin** directory to a directory in which you have write permission. As long as these files are in the **/usr/lpp/icraft/bin** directory, you cannot modify them for future use.

Approximate Disk Space Required (in megabytes)

| | |
|--------------------|-----|
| InfoCrafter | 4.2 |
| Messages/Help Text | 0.1 |

Special Hardware Required

The following hardware is required for InfoCrafter:

- POWERstation or POWERserver
- At least 8MB of internal memory.

Note: Although InfoCrafter only requires 8MB for installation, you may need additional memory to create source documents using Interleaf 5 or FrameMaker 3.0. Performance also may be affected by total system memory and the amount of fixed-disk storage available.

NetWare

Product Description

NetWare v3.11 provides the functionality of Novell's NetWare on the system, enabling users to integrate the system into existing NetWare computer networks. This means that DOS, OS/2, Windows, and NetWare clients can access applications; enhancing interoperability and sharing of data.

Option Names

NetWare filesystem (network.fs.obj)

NetWare Server Programs (network.server.obj)

Software Processes to Stop

All NetWare processes must be inactive.

Warning: Be sure that all user activity has ceased before stopping process.

To stop all NetWare processes, type the following:

```
/usr/lpp/netware/bin/stopnw
```

and press Enter.

Then type the following:

```
/usr/lpp/netware/bin/stopnps
```

and press Enter.

Approximate Disk Space Required (in megabytes)

| | |
|------------------------------------|-------|
| / (root) | 0.21 |
| /usr | 8.52 |
| /var | 0.29 |
| /tmp | 1.72 |
| /opt (created during installation) | 53.00 |

PC Simulator

Product Description

PC Simulator runs many Personal Computer DOS (Version 3.30 or 4.0) applications without modification on the system. The PC Simulator can run one or more DOS programs concurrently in multiple windows and on multiple displays. The simulator can work at the console and at nonconsole terminals. Multiple simulator sessions can access common files.

Option Names

PC Simulator (pcsim.obj)

This option contains the following subsystems:

PC-Simulator Utilities
PC-Simulator Samples
PC-Simulator Terminfo

PC Simulator Messages

| | |
|-----------------|------------------|
| U.S. English | (pcsimEn_US.msg) |
| Dutch (Belgium) | (pcsimNI_BE.msg) |
| French | (pcsimFr_FR.msg) |
| German | (pcsimDe_DE.msg) |
| Italian | (pcsimIt_IT.msg) |
| Korean | (pcsimko_KR.msg) |
| Norwegian | (pcsimNo_NO.msg) |
| Spanish | (pcsimEs_ES.msg) |

Prerequisite Software or Conditions

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--------------|
| pcsimEn_US.msg | pcsim.obj | PC Simulator |

To use PC Simulator in Video Graphics Array mode, AIXwindows must be installed. You must have a Disk Operating System (DOS) version 3.3 or 4.01 diskette.

Special Installation Instructions

Before PC Simulator can be used on the system, DOS version 3.30 or 4.01 must be installed. The following procedure describes how to install DOS.

1. You have two choices:
 - Create a file with the **touch** command. Insert your DOS system diskette in the diskette drive. Go to step 2.
 - Create a directory with the **mkdir** command. Insert your DOS system diskette in the diskette drive. Go to step 3.
2. Type `pcsim -A 3 -C /path/filename`, where `/path/filename` is the path and file you created with the **touch** command in step 1. Go to step 4.
3. Type `pcsim -A 3 -C /path`, where `path` is the directory you created with the **mkdir** command in step 1.

4. Boot from drive A, the drive containing the DOS diskette.
5. Follow the directions in the DOS manual for installing DOS on a new hard disk.
6. At the DOS A: prompt, type `fdisk` and press Enter. This creates a primary DOS partition on the emulated DOS fixed disk.

Note: You cannot partition a directory.

7. At the DOS A: prompt, type `select C: 001 US` and press Enter. This makes the emulated DOS fixed disk bootable, and copies the DOS system and utilities to the emulated DOS fixed disk.

Note: The **select** command is not available in DOS Version 4.0.

8. Press the Esc key, then type:

`pcsim`

and press enter.

This stops PC Simulator from the DOS prompt.

9. Remove your DOS diskette.

10. To boot DOS from the file or directory that is emulating a DOS fixed disk, specify the file as drive C when you start PC Simulator.

Approximate Disk Space Required (in megabytes)

| | |
|--------------------|--------------------|
| PC Simulator | 3.7 |
| Messages/Help Text | 0.1 (per language) |

Special Hardware Required

To use PC Simulator in Video Graphics Array mode, you must have a graphics display and AIXwindows.

SNA Services

Product Description

SNA Services allows user-provided application programs to communicate with traditional 3270, remote job entry (RJE), and peer applications within a Systems Network Architecture (SNA) network. SNA is a specification that formally defines the functional responsibilities for components of a data communications system and specifies how those components must interact. SNA Services provides an application programming interface to SNA Logical Unit (LU) 0, 1, 2, 3, and 6.2 protocols over a Physical Unit (PU) Type 2.1.

Option Names

Logical Unit 0 (LU0) (sna.lu0.obj)

This option contains the LU0 support provided by SNA Services.

SNA Services Base (sna.sna.obj)

This contains support for LU types: LU1, LU2, LU3, LU6.2. SNA Services is a set of programs and data files woven into the fabric of the operating system to provide transparent access to the resources of an SNA network.

SNA Messages:

U.S. English (snamEn_US.msg)

Belgian/Dutch (snamNI_BE.msg)

French (snamFr_FR.msg)

Japanese (snamJa_JP.msg)

Spanish (snamEs_ES.msg)

Swedish (snamSv_SE.msg)

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---|
| sna.lu0.obj | sna.sna.obj | SNA Services Base You must also install the appropriate data link control software from BOSEXT2 for your network communications hardware for both sna.lu0 and sna.sna.obj . For example, if a Token-Ring card is installed, you must install bosext2.dlctoken.obj software. |
| snamEn_US.msg | sna.sna.obj | SNA Services Base |
| sna.sna.obj | bos.obj | AIX Base Operating System |

Software Processes to Stop

Warning: Be sure all SNA activity has stopped before stopping the SNA subsystem.

You must stop SNA before installing another version of the software or updating the software.

To stop SNA, type the following:

```
stopsrc -cs sna
```

and press Enter.

Special Installation Instructions

Warning: You must export profiles from previous levels of SNA Services before installing Version 3.2. Installation of Version 3.2 may cause the previous version of SNA profiles to be lost. The new SNA Services **exportsna** command *cannot* access the pre-Version 3.2 profiles.

Profiles of any *supported* level (Version 3.1.x, where x is any release between 3.1 and 3.2) can be converted by means of an awk script (**/usr/lpp/sna/bin/sna_update.awk**) to be used with Version 3.2. Running this script should not endanger your profiles, even if the changes are not needed.

The fixes included in this script are:

- Inclusion of SNA Security Towers additions
- Correction of SAP Address range problem (04-EC is valid)
- Correction of X.25 range checking (1-127 is valid)
- Changing XID node ID from 05C to 071 in control point profiles
- Changing of some names for clarity (**attachment_name** and **local_lu_name**).

Converting profiles is a three-step process:

1. Export profiles from Version 3.1.x BOS. To export profiles from Version 3.1.x System, type the following:

```
exportsna -f stet (where stet is any filename you choose.)
```

and press Enter.

Save this file onto tape or diskette.

2. Install Version 3.2 BOS.

To install Version 3.2 BOS, refer to "BOS Installation: Determining Your Starting Point" on page 22 (immediately following the Table of Contents) and follow the instructions to select an installation method.

3. Restore exported profiles on Version 3.2 system.

To restore exported profiles on your Version 3.2 system, you will need to restore the exported profiles file, **stet**, to this machine; run the **awk** script on the file; and import the new file using the **import sna** command.

To run the awk script, type the following:

(where *newprofiles* is the profiles file to be imported)

```
awk -f /usr/lpp/sna/bin/sna_update.awk stet > newprofiles
```

and press Enter.

To import the new file, type the following:

```
importсна -l newprofiles
```

(where *newprofiles* is the profiles file to be imported)

and press Enter.

Note: See the SNA README file for more information.

Approximate Disk Space Required (in megabytes)

| | |
|-----------------------------------|--------------------|
| SNA Services: LU 1, 2, 3, and 6.2 | 5.5 |
| SNA Services: LU 0 | 0.7 |
| Messages/Help Text | 0.2 (per language) |

Special Hardware Required

SNA Services requires one or more of the following adapters on the system:

- Token-Ring High-Performance Network Adapter, with appropriate cables to attach to a Token-Ring LAN.
- Ethernet High-Performance LAN Adapter, with appropriate cables to attach to an Ethernet or IEEE 802.3 LAN.
- X.25 Interface Co-Processor/2, with appropriate cables to attach to an X.25 packet switching network.
- 4-Port Multiprotocol Communications Controller and 4-Port Multiprotocol Interface Cable, with appropriate cables to attach to a modem to establish an SDLC connection to a System/370 or a supported peer workstation.

Network Management

Product Description

Network Management provides facilities for a system to participate in network management activities for both SNA networks and TCP/IP networks.

Option Names

Alert Manager (netmgr.am.obj)

This option provides the facility to log generic alerts, as defined by the SNA Management Services architecture. The system sends these alerts to the NetView host system as NMVTs through an SNA System Services Control Point-Physical Unit (SSCP-PU) session.

This option contains the following subsystem:

Alert Manager

SNMP Application Programming Interface (netmgr.api.obj)

This option provides a programming interface to aid the user in writing SNMP manager applications and contains the following subsystem:

Application Programming Interface

SNMP Command Line Manager (netmgr.clm.obj)

This option provides commands for generic SNMP get, next, and set requests and contains the following subsystem:

CLM

Host Command Facility Catcher (netmgr.hcf.obj)

This option provides support for running shell scripts and commands using remote login from a host user through the Host Command Facility.

This option contains the following subsystem:

HCF

NetView Distribution Manager Catcher (netmgr.nvdm.obj)

This option provides support for receiving file or data distributions from a host system as distributed by NetView/Distribution Manager.

This option contains the following subsystem:

NVDM

SNMP Manager (netmgr.xgmon.obj)

This option provides X11-based SNMP manager applications for a TCP/IP network.

This option contains the following subsystem:

Gateway Monitor Utility

Network Management I (netmgrmEn_US.msg)

This option provides English system messages for the Alert Manager.

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---|
| netmgrmEn_US.msg | netmgr.am.obj | Alert Manager |
| netmgr.hcf.obj | sna.lu0.obj sna.sna.obj | The System Network Architecture Services (SNA) software product |
| netmgr.nvdm.obj | sna.lu0.obj sna.sna.obj | The System Network Architecture Services (SNA) software product |

Software Processes to Stop

Warning: Be sure all user activity has ceased before stopping processes.

Note: If you are installing onto a machine that will be a diskless server, you must also perform the following procedures on each of the diskless clients *of that server*.

For **netmgr.am.obj**, the **startam** and **rptalert** processes must not be active.

1. To determine if the **startam** process is active, type `ps -e | grep startam` and press Enter.

If the **startam** process is active, you will see a message similar to the following:

```
3093 pts/0 0:01 startam
```

2. To terminate the **startam** process, enter the **stopam** command.
3. To determine if the **rptalert** process is active, type `ps -e | grep rptalert` and press Enter.

If the **rptalert** process is active, you will see a message similar to the following:

```
5081 pts/0 0:00 rptalert
```

4. In this example, 5081 is the pid for **rptalert**. Use the appropriate **pid** when entering the following to terminate **rptalert**:

```
kill -9 pid
```

For **netmgr.hcf.obj**, the **hcfd** process must not be active.

5. To determine if the **hcfd** process is active, type `ps -e | grep hcfd` and press Enter.

If the **hcfd** process is active, you will see a message similar to the following:

```
9003 pts/0 0:00 hcfd
```

6. In this example, 9003 is the pid for **hcfd**. Use the appropriate **pid** when entering the following to terminate **hcfd**:

```
kill -9 pid
```

For **netmgr.nvdm.obj**, the **nvdmrelay** process must not be active.

7. To determine if the **nvdmrelay** process is active, type `ps -e | grep nvdmrelay` and press Enter.

If the **nvdmrelay** process is active, you will see a message similar to the following:

```
4647 pts/0 0:00 nvdmrelay
```

8. In this example, 4647 is the pid for **nvdmrelay**. Use the appropriate pid when entering the following to terminate **nvdmrelay**:

```
kill -9 pid
```


For **netmgr.xgmon.obj**, the **xgmon** process must not be active.

9. To determine if the **xgmon** process is active, type `ps -e | grep xgmon` and press Enter.

If the **xgmon** process is active, you will see a message similar to the following:

```
6163 pts/2 0:00 xgmon
```

10. In this example, **6163** is the pid for **xgmon**. Use the appropriate pid when entering the following to terminate **xgmon**:

```
kill -9 pid
```

11. If you are at the **xgmon** console, you can type in the **xgmon quit** system command instead of using the **kill -9 pid** method. To use this method to terminate the **xgmon** process, type `quit` at the **xgmon** console and press Enter.

Approximate Disk Space Required (in megabytes)

| | |
|---|--------------------|
| Alert Manager | 1.6 |
| SNMP Application Programming Interface | 0.6 |
| SNMP Command Line Manager | 0.6 |
| Host Command Facility Catcher | 0.1 |
| NetView Distribution Manager Catcher | 0.3 |
| Simple Network Management Protocol (SNMP) Manager | 1.9 |
| Messages/Help Text | 0.1 (per language) |

Special Hardware Required

Hardware requirements for executing the Host Command Facility and the NetView Distribution Manager Catcher:

- For running an LUO session over SDLC:
 - 4-Port Multiprotocol Communications Controller and 4-Port Multiprotocol Interface cable with appropriate cables to attach to a modem
 - Modem
- For running an LUO session over X.25, you need an X.25 Interface Co-Processor/2, with appropriate cables.
- For running an LUO session over Token-Ring, you need a High Performance Network adapter, with appropriate cables.

Hardware requirements for executing the Alert Manager:

- For sending alerts to the NetView host over SDLC:
 - 4-Port Multiprotocol Communications Controller and 4-Port Multiprotocol Interface cable with appropriate cables to attach to a modem
 - Modem
- For sending alerts to the NetView host over Token-Ring, you need a Token-Ring High Performance Network adapter, with appropriate cables.

Computer Graphics Interface Toolkit

Product Description

The Computer Graphics Interface Toolkit is a set of graphics primitives that can be called from various system programming languages and used to create device-independent graphics code. The Computer Graphics Interface Toolkit provides virtual device interfaces and the Computer Graphics Interface (CGI) for application programming.

The Computer Graphics Interface Toolkit provides a migration path for applications developed using the RT System Graphics Development Toolkit.

Option Names

CGI Toolkit Messages:

| | |
|---------------|-----------------|
| U.S. English | (vdimEn_US.msg) |
| Belgian/Dutch | (vdimNI_BE.msg) |
| French | (vdimFr_FR.msg) |
| Korean | (vdimko_KR.msg) |
| Spanish | (vdimEs_ES.msg) |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) |
|------------------------------|--|
| vdi.obj | bosex1.vdidd.obj CGI Device Drivers bsmXx_XX.msg Base System Messages where Xx_XX is the abbreviation for your primary language. |

Approximate Disk Space Required (in megabytes)

| | |
|-------------------------------------|-----|
| Computer Graphics Interface Toolkit | 1.4 |
| Messages/Help Text | 0.1 |

Graphics File Translator

Product Description

Graphics File Translator provides an interactive tool and an Application Programming Interface (API). The tool allows CGM-formatted files to be viewed, combined, or output to a printer or plotter. The API provides functions to interpret or to translate the metafile elements of a CGM-formatted file.

Note: The CGM-formatted files must have been generated with the metafile device driver packaged in BOSEXT1 (**bosext1.vdidd.obj**).

Graphics File Translator supports C, FORTRAN, and Pascal language bindings. GFT output can be directed to AIXwindows, hardcopy devices, or captured as revisable data file images (metafiles).

The translator features the following:

- Support for ANSI CGM X3.122-1986 Standard
- Binary Record Format, Clear Text Record Format, and Character-Encoding Format encoding capabilities

Option Names

Graphics File Translator (vdigft.obj)

Graphics File Translator Messages:

| | |
|-----------------|--------------------|
| U.S. English | (vdigftmEn_US.msg) |
| Dutch (Belgium) | (vdigftmNI_BE.msg) |
| French | (vdigftmFr_FR.msg) |
| Korean | (vdigftmko_KR.msg) |
| Spanish | (vdigftmEs_ES.msg) |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|----------------------|
| vdigft.obj | bosext1.vdidd.obj | CGI Device Drivers |
| | bsmXx_XX.msg where Xx_XX is the abbreviation for your primary language. | Base System Messages |

Approximate Disk Space Required (in megabytes)

| | |
|--------------------------|-----|
| Graphics File Translator | 3.6 |
| Messages/Help Text | 0.1 |

Graphics Plotting System

Product Description

Graphics Plotting System provides an application programming interface (API) and a flexible structure for the effective construction of business graphics. Graphics Plotting System includes an efficient set of building blocks for chart creation.

Option Names

Graphics Plotting System (vdipplot.obj)

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|----------------------|
| vdipplot.obj | bosext1.vdidd.obj | CGI Device Drivers |
| | bsmXx_XX.msg | Base System Messages |
| | where Xx_XX is the abbreviation for your primary language. | |

Approximate Disk Space Required (in megabytes)

Graphics Plotting System 3.0

Xstation Manager

Product Description

Xstation Manager supports the attachment of an Xstation to a system on an Ethernet Version 2, IEEE 802.3, or Token-Ring LAN. The Xstation 130 and Xstation 150 also support attachment via SLIP (Serial Link Internet Protocol).

Option Names

Support for 7010 Xstation (x_st_mgr.obj)

This option contains the following subsystem:

Xstation Manager

System Messages for Xstation Manager:

| | |
|---------------------|----------------------|
| U.S. English | (x_st_mgrmEn_US.msg) |
| Dutch (Belgium) | (x_st_mgrmNI_BE.msg) |
| French | (x_st_mgrmFr_FR.msg) |
| German | (x_st_mgrmDe_DE.msg) |
| Italian | (x_st_mgrmlt_IT.msg) |
| Korean | (x_st_mgrmko_KR.msg) |
| Norwegian | (x_st_mgrmNo_NO.msg) |
| Swedish | (x_st_mgrmSv_SE.msg) |
| Chinese (Tradition) | (x_st_mgrmzh_TW.msg) |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| x_st_mgr.obj | bosnet.tcpip.obj | Transmission Control Protocol/ Internet Protocol (TCP/IP) |
| | X11rte.obj | AIXwindows Run Time Environment |
| | bos.data | AIX Base Operating System |
| x_st_mgrmEn_US.msg | x_st_mgr.obj | IBM Xstation support for IBM Xstation 120, Xstation 130 and Xstation 150 |

Software Processes to Stop

Ensure that no one else is using the system and that no user programs are running.

Special Installation Instructions

Note: Xstation Manager Version 1.3 requires AIXwindows Version 1.2.0 (X11R4) and will not operate with AIXwindows Version 1.2.4 (X11R5). Xstation Manager Version 1.4 will operate with AIXwindows Version 1.2.4 (X11R5) or AIXwindows 1.2.0 (X11R4).

When installation is complete, be sure you follow the directions to shut down and restart your system. This starts the **inetd** and **x_st_mgrd** daemons. Before you install your Xstation, TCP/IP must be configured. For more information about how to configure TCP/IP and NFS, refer to "Chapter 14. Network Configuration." After the Xstation Manager program is installed on your system, you must configure one or more Xstations on your network.

Approximate Disk Space Required (in megabytes)

| | |
|--------------------|--------------------|
| Xstation Manager | 2.6 |
| Messages/Help Text | 0.1 (per language) |

Special Hardware Required

Ethernet or Token-Ring are required for the system to communicate with the Xstation.

XL FORTRAN Compiler

Product Description

The XL FORTRAN Compiler is an application enabler for the system family of products. A program upgrade option is included for migration from the Version 1 XL FORTRAN products to Version 2.

Option Names

XL FORTRAN Compiler (xlfcmp.obj)

XL FORTRAN Compiler Messages:

U.S. English (xlfcmpmEn_US.msg)

Japanese (xlfcmpmJa_JP.info)

XL FORTRAN Documentation:

U.S. English (xlfcmpiEn_US.info)

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---|
| xlfcmp.obj | xlfrte.obj | XL FORTRAN Run Time Environment |
| | bosadt.bosadt.obj | Base Application Development Toolkit |
| | bosadt.lib.obj | Base Development Libraries and Include Files |
| xlfcmpiEn_US.info | bssiEN_US.info | Base System Standard Information – U.S. English |

Software Processes to Stop

Ensure that no programs are compiling or running.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Approximate Disk Space Required (in megabytes)

| | |
|------------------------|--------------------|
| XL FORTRAN Compiler | 8.4 |
| FORTTRAN Documentation | 5.0 |
| Messages/Help Text | 0.3 (per language) |

XL FORTRAN Run Time Environment

Product Description

Applications developed using the XL FORTRAN Compiler Version 2 must be linked with XL FORTRAN Run Time Environment Version 2 for execution. The Run Time Environment can be linked using dynamic binding (requiring that the Run Time Environment be available at the time the application is executed.) Alternatively, the Run Time Environment can be statically linked to the application, resulting in a larger object module, but eliminating the need for the Run Time Environment in the execution environment.

A program upgrade option is included for migration from the Version 1 XL FORTRAN products to Version 2.

Option Names

XL FORTRAN Run Time Environment (xlfrte.obj)

XL FORTRAN Run Time Environment Messages:

| | |
|-----------------|--------------------|
| U.S. English | (xlfrtemEn_US.msg) |
| Canadian French | (xlfrtemFr_CF.msg) |
| French | (xlfrtemFr_FR.msg) |
| Japanese | (xlfrtemJa_JP.msg) |
| Spanish | (xlfrtemSp_SP.msg) |

Software Processes to Stop

Ensure that no programs are compiling or running.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Approximate Disk Space Required (in megabytes)

| | |
|---------------------------------|--------------------|
| XL FORTRAN Run Time Environment | 0.6 |
| Messages/Help Text | 0.1 (per language) |

XL Pascal Compiler

Product Description

The XL Pascal Compiler generates optimized object code when the optimization compiler option is specified.

The XL Pascal Compiler provides the following features:

- Meets American National Standard Pascal Computer Programming Language (ANSI/IEEE 770X3.97–1983), ISO 7185–1983(0), and Federal Information Processing Standard publication 109 industry standards.
- Source code compatible, with some exceptions, with System/370 VS Pascal.
- Support for ANSI/IEEE standard 754-1985 for binary floating-point arithmetic.
- Support for inter-language calls.
- Support for the dbx symbolic debugging tool.
- A library of run-time routines that supports input and output operations, string manipulation operations, and other language-specific operations.

Option Names

XL Pascal Compiler (xlpcmp.obj)

XL Pascal Compiler Documentation (U.S. English) (xlpcmpiEn_US.info)

XL Pascal Compiler Messages:

U.S. English (xlpcmpmEn_US.msg)

Japanese (xlpcmpmJa_JP.msg)

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| xlpcmp.obj | xlprte.obj | XL Pascal Run Time Environment |
| xlpcmpiEn_US.info | bssiEN_US.info | Base System Standard Information – U.S. English |

Software Processes to Stop

Ensure that no programs are compiling or running.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Approximate Disk Space Required (in megabytes)

| | |
|----------------------|--------------------|
| XL Pascal Compiler | 4.0 |
| Pascal Documentation | 3.3 |
| Messages/Help Text | 0.2 (per language) |

XL Pascal Run Time Environment

Product Description

Applications developed using the XL Pascal Compiler must be linked with XL Pascal Run Time Environment for execution. The Run Time Environment can be linked using dynamic binding (requiring that the Run Time Environment be available at the time the application is executed.) Alternatively, the Run Time Environment can be statically bound to the application, resulting in a larger object module, but eliminating the need for the Run Time Environment in the execution environment.

The XL Pascal Run Time Environment library routines include support for the following types of functions that can be invoked by an XL Pascal Compiler program:

- Text file data transformations between the character form found in text files and the internal data formats
- Data file access and support functions
- String manipulation functions

Option Names

XL Pascal Run Time Environment (xlprte.obj)

XL Pascal Run Time Environment Messages:

| | |
|-----------------|--------------------|
| U.S. English | (xlprtemEn_US.msg) |
| Canadian French | (xlprtemFr_CF.msg) |
| French | (xlprtemFr_FR.msg) |
| Japanese | (xlprtemJa_JP.msg) |
| Spanish | (xlprtemSp_SP.msg) |

Software Processes to Stop

Ensure that no programs are compiling or running.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Approximate Disk Space Required (in megabytes)

| | |
|--------------------------------|---------------------|
| XL Pascal Run Time Environment | 0.3 |
| Messages/Help Text | 0.01 (per language) |

Ada Compiler

Product Description

The Ada Compiler is a production-quality compiler, suitable for either large or small-scale software projects. The function of the Ada Run Time Environment comes with the compiler.

The compiler provides the following features:

- Meets American National Standard Ada ANSI/MIL-STD 1815A-1983, ISO 8652-1987, and Federal Information Processing Standard (FIPS) publication 119 industry standards
- Conformance to the declarations in the package specification of the Proposed Standard for a Generic Package of Elementary Functions in Ada ISO-IEC/JTC1/SC22/WG9 (Ada) Numerics Rapporteur Group, Draft 1.2, dated 8/21/90
- Ada library management tools
- Symbolic debugger with graphics and ASCII interfaces
- Pragma interface to FORTRAN, C, and system Assembler
- AIXwindows (Xlib) interface
- Graphics Library (GL) interface
- Global optimizer
- Set of complementary tools, including code profiler, source dependency analyzer, cross referencer, syntax verifier, source code formatter, and recompilation tools.

Option Names

| | |
|-----------------------------------|-------------------|
| Ada Compiler | (adacmp.obj) |
| Ada GL Binding | (adacmp.gl.obj) |
| Ada GSL Binding | (adacmp.gsl.obj) |
| Ada Mathematics Libraries Binding | (adacmp.math.obj) |
| Ada NLS Binding | (adacmp.nls.obj) |
| Ada AIXwindows Binding | (adacmp.xwd.obj) |
| Ada Documentation – U.S. English | (adaiEn_US.info) |
| Ada Run Time Environment | (adarte.obj) |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| adacmp.obj | adarte.obj bosadt.bosadt.obj | Ada/6000 Run Time Environment Base Applications Development Toolkit/6000 |
| adacmp.gl.obj | adacmp.obj X11_3d.gl.rte.obj | Ada/6000 Compiler AIXwindows/3D Support |
| adacmp.gsl.obj | adacmp.obj X11dev.src | Ada/6000 Compiler AIXwindows Development Libraries and Include Files |
| adacmp.math.obj | adacmp.obj | Ada/6000 Compiler |
| adacmp.nls.obj | adacmp.obj | Ada/6000 Compiler |
| adacmp.xwd.obj | adacmp.obj X11rte.obj | Ada/6000 Compiler AIXwindows Run Time Environment |
| adaiEn_US.info | bssiEN_US.info | Base System Standard Information option of the InfoExplorer Databases |

Software Processes to Stop

The following software processes must be stopped before installation:

- If installing **adaiEn_US.info**, stop InfoExplorer.
- If installing **adacmp.obj**, stop all Ada processes.
- Any other application programs compiled with Ada compiler or tool must be stopped before installing Ada.
- Any Ada compiler processes that access a particular binding must be stopped when installing a new version of that binding.

Special Installation Instructions

Make sure that the setting of your file size parameter allows you to create files up to 10MB in size. Several of the files in this product are quite large. Use the **ulimit** command to change your file size setting.

Approximate Disk Space Required (in megabytes)

| | |
|-------------------|------|
| Ada (total) | 49.6 |
| Ada Documentation | 7.8 |

Ada Run Time Environment

Product Description

The Ada Run Time Environment contains the necessary Ada components to execute applications developed with the Ada Compiler on another system.

Option Names

Ada Run Time Environment (adarte.obj)

This option contains the component that comes with the compiler.

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---------------------------|
| adarte.obj | bos.obj | AIX Base Operating System |

Software Processes to Stop

The following software processes must be stopped before installation:

- If installing **adarte.obj**, stop all Ada compiler, tool, and application program processes.
- Any other application programs compiled with Ada must be stopped before installing Ada.

Special Installation Instructions

Make sure that the setting of your file size parameter allows you to create files up to 10MB in size. Several of the files in this product are quite large. Use the **ulimit** command if you need to change your file size setting.

Approximate Disk Space Required (in megabytes)

Ada Run Time Environment 1.0

Distributed Computing Environment (DCE)

Product Description

The Distributed Computing Environment (DCE) provides tools and services that support the creation, use, and maintenance of distributed applications in a heterogeneous computing environment.

Option Names

The following DCE packages are available as part of the release. Each package has one or more installable options.

| | |
|--|------------------------|
| DCE Threads Package | (dcephreads.obj) |
| This package includes the following installable options: | |
| Libraries, object files and header files | (dcephreads.obj) |
| Message catalogs (U.S. English only) | (dcephreads.En_US.msg) |
| DCE Base Package | (dcebase.obj) |
| This package (client support, basic DFS support, application development tools, and server administration tools) includes the following installable options: | |
| Client support and server-administration tools | (dcebase.base.obj) |
| Basic DFS support (server support for sharing AIX Journaled File System files, client support) | (dcebase.dfs.obj) |
| Application development support | (dcebase.appdev.obj) |
| Additional administration tools | (dcebase.admin.obj) |
| Base message catalogs (U.S. English only) | (dcebase.En_US.msg) |
| DCE XDS/XOM Interface Package | (xdsxom.obj) |
| This package includes the following installable option: | |
| XDS/XOM library and header files to interface to the DCE Cell Directory Service namespace. | (xdsxom.obj) |
| DCE InfoExplorer Documentation Package | (dcebaseiEn_US.info) |
| This package includes the following installable option: | |
| All DCE InfoExplorer documentation | (dcebaseiEn_US.info) |
| DCE Security Server Package | (dcesec.obj) |
| This package includes the following installable options: | |
| Security server files | (dcesec.obj) |
| Security server message catalogs (U.S. English only) | (dcesec.En_US.msg) |

DCE Cell Directory Server Package (dcecds.obj)

This package includes the following installable options:

Cell Directory Service (CDS) server files (dcecds.obj)

CDS server message catalogs (U.S. English only) (dcecds.En_US.msg)

DCE Enhanced File Server (dceedfs.obj)

This package includes the following installable options:

DFS server support for exporting DCE Local File System (LFS) files, including DCE Access Control List (ACL) support and the server for the DFS Backup System. (dceedfs.obj)

Message catalogs of DFS enhanced server (U.S. English only) (dceedfs.En_US.msg)

DCE Base Privacy Level Protection Package (dcepriv.obj)

This package includes the following installable options:

Note: This package is available only in the U.S. and in certain other countries.

Privacy protection level files (dcepriv.obj)

Prerequisite Software

For a list of 3.2 Selective Enhancements and Selective Fixes that must be installed on your system before you install DCE, see the *DCE Release Notes* (GC23-2434) which were shipped with DCE.

| Option You Are Installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|-----------------------------------|---|--|
| dcephthreads.obj | bos.obj | BOS Version 3.2 |
| dcephthreads.En_US.msg | dcephthreads.obj | DCE Threads |
| dcebase.base.obj (all options) | bos.obj | Base Operating System (BOS) Version 3.2 |
| | bosnet.tcpip.obj | TCP/IP option of the BOS Network Facilities |
| | dcephthreads.obj | DCE Threads |
| dcebase.dfs.obj | dcebase.base.obj | DCE Base |
| dcebase.admin.obj | dcebase.base.obj | DCE Base |
| dcebase.appdev.obj | dcebase.base.obj | DCE Base |
| dcebase.En_US.msg | dcebase.base.obj | DCE Base |
| xdsxom.obj | dcebase.base.obj | DCE Base |
| | dcephthreads.obj | TCP/IP option of the BOS Network Facilities |
| dcesec.obj | dcebase.base.obj | DCE Base |
| dcesec.En_US.msg | dcesec.obj | DCE Security Server |
| dcecds.obj | dcebase.base.obj | DCE Base |
| dcecds.En_US.msg | dcecds.obj | DCE Cell Directory Server |

| | | |
|-------------------------------------|--|--------------------------------------|
| dcepriv.obj | dcebase.base.obj | DCE Base |
| Option You Are Installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
| dcepriv.obj | dcebase.dfs.obj | Base DFS option of the DCE Base |
| dceedfs.En_US.msg | dceedfs.obj | DCE Enhanced Distributed File System |
| dcebaseiEn_US.info | bos.data | BOS data files |
| | bssiEN_US.info | BOS information file |

Note: To use the **dcebase.appdev.obj** option for building DCE applications, the following options or equivalent options must be installed:

- BOS Application Development Toolkit (**bosadt.bosadt.obj**)
- BOS Application Development libraries and include files (**bosadt.lib.obj**)
- XL C Compiler (**xlccmp.obj**).

Approximate Disk Space Required (in megabytes)

| | |
|----------------------|------|
| dcephreads.obj | 2.0 |
| dcephreads.En_US.msg | 0.1 |
| dcebase.base.obj | 7.6 |
| dcebase.dfs.obj | 5.0 |
| dcebase.admin.obj | 2.5 |
| dcebase.appdev.obj | 2.6 |
| dcebase.En_US.msg | 0.6 |
| xdsxom.obj | 1.1 |
| dcesec.obj | 2.7 |
| dcesec.En_US.msg | 0.1 |
| dcecds.obj | 1.3 |
| dcecds.En_US.msg | 0.1 |
| dceedfs.obj | 4.2 |
| dceedfs.En_US.msg | 0.1 |
| dcepriv.obj | 0.2 |
| dcebaseiEn_US.info | 25.0 |

Encina

Product Description

The Encina family of transaction processing services provides distributed transaction processing foundation services that simplify the construction of reliable, distributed applications.

Option Names

| | |
|---------------------------------|--|
| Encina Base feature | (encExec.obj) (of the AIX DCE Base Services) |
| Encina Server | (encServ.obj) |
| Encina Structured File Server | (encSfs.obj) |
| Encina Monitor | (encMon.obj) |
| Encina PPC Executive | (ppcExec.obj) |
| Encina PPC Gateway | (ppcGate.obj) |
| Encina InfoExplorer information | (encExeciEn_US.info) |

Prerequisites

All Encina components require the AIX 3.2.3 (or higher) Extended Support and the Distributed Computing Environment (DCE) Base feature (of the AIX DCE Base Services).

Encina has the following requirements of a DCE environment:

- A DCE cell has been installed, configured, and initialized.
- One DCE Security Server and one DCE Cell Directory Server (CDS) must be installed in the cell.
- A DCE CDS directory tree has been created and the appropriate Access Control Lists (ACLs) have been set on those involved directories.
- The DCE Base feature (of the AIX DCE Base Services) must be running on the machines that are designated to run Encina Application Development Platform.

Most Encina components require that other Encina components be installed on the same workstation. The prerequisite software for the various Encina options are as follows:

| Option You Are Installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| encExec.obj | dcebase.obj | DCE Base feature |
| encServ.obj | encExec.obj | Encina Base feature (of the AIX DCE Base Services) |
| encSfs.obj | encExec.obj | Encina Base feature (of the AIX DCE Base Services) |
| | encServ.obj | Encina Server |
| ppcExec.obj | encExec.obj | Encina Base (of the AIX DCE Base Services) |

| | | |
|---------------------------|-----------------------|--|
| ppcGate.obj | encExec.obj | Encina Base feature (of the AIX DCE Base Services) |
| | ppcExec.obj | Encina PPC Executive |
| | sna.sna.obj | SNA Services Base |
| encMon.obj | encExec.obj | Encina Base feature (of the AIX DCE Base Services) |
| | encServ.obj | Encina Server |
| encExeciEn_US.info | bos.data | BOS data files |
| | bssiEN_US.info | BOS information files |

In addition to the dependencies listed in the preceding table, note the following programming requirements for the DCE/Encina cell:

- Encina Base feature (of the AIX DCE Base Services) must be installed on every workstation in the cell.
- At least one instance of the Encina Server must be installed in the cell.
- On every application server that accesses X/Open-compliant databases, the Encina Server must be installed.
- If the Encina Monitor is installed, one instance of the Encina Structured File Server must be installed in the cell.
- Encina Monitor must be installed on every workstation that is running an application server.
- If the CICS Monitor is installed, one instance of the Encina Structured File Server must be installed in the cell.
- Encina Peer-to-Peer Executive must be installed on every workstation running an application that is communicating in a peer-to-peer style (for example, using the CPI-C/RR interface) with another application on a different workstation.
- Encina Peer-to-Peer Executive must be installed on every workstation that is running a CICS application and communicating with a CICS application on another workstation in the cell.
- The Encina Peer-to-Peer Gateway can be installed on a designated machine in the cell to connect to SNA networks. The Encina Peer-to-Peer Executive is a prerequisite on the gateway node.
- Encina Peer-to-Peer Executive, Encina Peer-to-Peer Gateway, and SNA Services Base must be installed on a designated workstation in order to connect to a SNA network.
- Since the Encina Server provides libraries (such as **libEncServer.a**) which all application servers must access, the Encina Server must be installed on each application server.
- If the resource manager supports a distributed client/server environment, the client code must be installed on the same machine as the server code. The database itself (or server code) can be installed on a different machine and does not need to reside in an Encina cell.

Applications Development Considerations

The Base Application Development Toolkit (**bos.adt**) is required in order to develop application programs. If you are writing "threaded" applications, you may find the **dbx** symbolic debugger useful when debugging your applications.

Approximate Disk Space Required (in megabytes)

| | |
|--------------------|------|
| encExec.obj | 10.0 |
| encExecmEn_US.obj | 0.4 |
| encMon.obj | 2.9 |
| encServ.obj | 2.8 |
| encServmEn_US.obj | 0.2 |
| encSfs.obj | 2.0 |
| encSfsmEn_US.obj | 0.1 |
| ppcExec.obj | 1.7 |
| ppcExecmEn_US.obj | 0.1 |
| ppcGate.obj | 0.6 |
| ppcGatemEn_US.obj | 0.1 |
| encExeciEn_US.info | 17.0 |

Engineering and Scientific Subroutine Library (ESSL)

Product Description

Engineering and Scientific Subroutine Library (ESSL) is a set of high-performance mathematical subroutines. The ESSL library can be used with FORTRAN or C.

Option Names

Engineering Scientific Subroutine Library (essl14)

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|--|
| essl14 | xlf rte.obj | XL FORTRAN Run Time Environment |
| | xlf cmp.obj | XL FORTRAN Compiler/6000 is required when customizing ESSL |
| | bosadt.bosadt.obj | Base Application Development Toolkit |
| | bosadt.lib.obj | Base Development Libraries and Include Files |
| | bosadt.prof.obj | Base Profiling Support |

Special Installation Instructions

ESSL error option table customization can be performed after installation.

Approximate Disk Space Required (in megabytes)

Engineering and Scientific Subroutine Library 5.0

Open Systems Interconnection Messaging and Filing (OSIMF)

Product Description

OSIMF provides electronic mail and file transfer services that support the Open System Interconnection (OSI) standards specified by the International Standards Organization (ISO).

Option Names

| | |
|----------------------------------|--------------------|
| OSI protocol stack | (osimf.osistk.obj) |
| FTAM client | (osimf.ftamc.obj) |
| FTAM server and FTAM-FTP gateway | (osimf.ftamsg.obj) |
| X.400 Messaging System | (osimf.mhs.obj) |
| X/Open Transport Interface | (osimf.xti.obj) |

Prerequisite Software

| Option you are installing... | Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing) | |
|------------------------------|---|---------------------|
| osimf.ftamc.obj | osimf.osistk.obj | OSI protocol stack |
| osimf.ftamsg.obj | osimf.osistk.obj | OSI protocol stack |
| | bosnet.tcpip.obj | TCP/IP Applications |
| osimf.mhs.obj | osimf.osistk.obj | OSI protocol stack |
| | bosext1.mh.obj | Mail Handler |
| osimf.xti.obj | osimf.osistk.obj | OSI protocol stack |
| 802.3 LAN operation | bosext2.dlc8023.obj | IEEE 802.3 DLC |
| 802.5 LAN operation | bosext2.dlctoken.obj | Token-Ring DLC |

Software Processes to Stop

Currently running versions of OSIMF must be stopped.

Special Installation Instructions

Do not attempt to start OSIMF, or its individual applications until you have planned for and made the necessary configuration changes for your environment.

Approximate Disk Space Required (in megabytes)

| | |
|---|-----|
| Open Systems Interconnection Messaging and Filing | 6.5 |
|---|-----|

Special Hardware Required

If you will be communicating with another system over a network, at least one of the following adapters is required:

- Token-Ring High-Performance Network adapter, with appropriate cables to attach to an Token-Ring LAN.
- Ethernet High-Performance Network adapter, with appropriate cables to attach to an IEEE 802.3 LAN.
- X.25 Interface Co-Processor/2, with appropriate cables to attach to an X.25 packet switching network.

XL C++ Compiler

Product Description

The XL C++ Compiler is designed to offer a productive application development environment for programmers and application developers. The compiler provides a class browser, a set of class libraries, and a test coverage tool for the system family of processors.

Option Names

| | |
|---|------------------|
| XL C++ Compiler (and associated tools) | (xlCcmp.obj) |
| XL C++ Compiler Run Time Environment | (xlCrte.obj) |
| XL C++ Compiler Browser Programs (and data) | (xlCbrs.obj) |
| XL C++ Compiler Messages – U.S. English | (xlCmEn_US.msg) |
| XL C++ Compiler NIH Class Library | (xlClib.nih.src) |
| XL C++ Compiler InterViews Class Library | (xlClib.iv.src) |
| XL C++ Compiler Browser for SDE WorkBench | (xlCwkb.obj) |

Prerequisite Software

To install the xlCwkb.obj and use the XL C++ Compiler Browser for SDE WorkBench, the SDE WorkBench Version 1.2 (or later) must already be installed on your system.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Approximate Disk Space Required (in megabytes)

| | |
|--|------|
| XL C++ Compiler (and associated programs) | 15.0 |
| XL C++ Compiler InterViews Class Library and NIH Class Library | 16.0 |

Enterprise Systems Connection (ESCON)

Product Description

The Enterprise System Connection allows the RISC System/6000 system unit to communicate with one or more System/390 (S/390) hosts using the ESCON architecture. This connectivity configuration allows the RISC System/6000 system unit to be used as a gateway between the S/390 host and the downstream networks that consist of local area networks (LANs) or wide area networks (WANs).

Option Names

Device driver and necessary supporting data files (escon.obj)

Special Hardware Required

RISC System/6000 ESCON Control Unit Adapter #2756

Approximate Disk Space Required

ESCON device driver 1.5

NOTES

Chapter 18. Hardware Basics

This chapter gives basic instructions on how to use your system unit hardware and how to log on and log off the system. For more detailed information about how to operate your system unit, refer to the *System User's Guide*.

If you need information on how to operate peripheral devices, such as tape drives and CD-ROM drives, refer to the hardware operations manual that came with those devices.

Note: If you have come here from an installation procedure, do *not* at this time perform any of the procedures contained in this section. Simply read this material to gain background information. The installation chapter that you are using will tell you when it is time to actually perform these procedures.

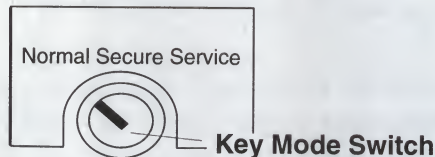
This chapter contains generic illustrations. The exact appearance of your system may vary slightly from the illustrations.

This chapter contains the following sections:

| | |
|---|------|
| • System Unit Key Switch | 18-2 |
| • System Unit Power Switch | 18-2 |
| • Reading the Three-Digit LED Display | 18-3 |
| • Using the Reset Button | 18-3 |
| • Adjusting the Display Screen | 18-4 |
| • Logging In | 18-4 |
| • Logging Out | 18-5 |
| • Related Information | 18-5 |

System Unit Key Switch

System Unit Key Switch

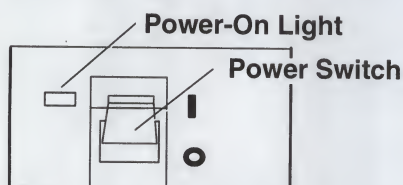


The system unit key switch has three key mode positions: NORMAL, SECURE, and SERVICE. When the key mode switch is set to NORMAL, the normal system functions are available. When the key mode switch is in the SECURE position, the normal system functions are available except that the system cannot be rebooted (restarted). This is to prevent an unauthorized person from trying to bypass the password prompt by booting with diskettes or tape. When the key mode switch is in the SERVICE position, the system can carry out internal diagnostic routines to verify that all system functions are operating properly.

At different points within a procedure, the user will be required to place the key switch in any one of these three positions. The illustration shows the system unit key switch with the key mode switch in the NORMAL position.

System Unit Power Switch

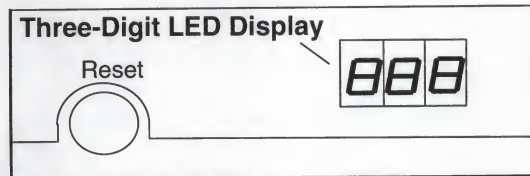
System Unit Power Switch



The system unit power switch is a toggle switch with two positions: ON, denoted by **I**, and OFF, denoted by **O**, on the Power Switch panel. When the switch is set to the ON position, the power-on light will be illuminated. The system will then start a routine power-on self-test (POST) with diagnostic codes being displayed on the three-digit LED display that is described in the next section.

If power does not come on when you set the power switch to ON, ensure that the power cord, located at the back of the system unit, is plugged into a grounded electrical wall outlet and firmly plugged into the system unit. If this does not solve the problem, refer to the *Problem Solving Guide and Reference*.

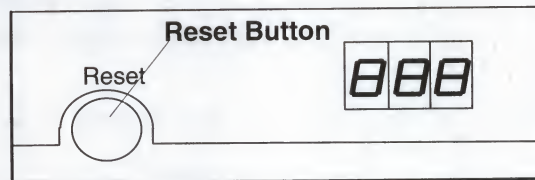
Reading the Three-Digit LED Display



Note: On some types of system units, you may have to open a door to see the three-digit LED display.

The three-digit LED display (usually located near the reset button) is used to indicate the progress of the system unit self-tests and configuration program by means of a three-digit code. (This code may have a lowercase letter in place of a number, in some cases.) This display is also used to display diagnostic program messages (three-digit codes), when the key switch is in SERVICE mode, and to indicate if there has been a serious disruption of the processes of the operating system during normal operational use.

Using the Reset Button

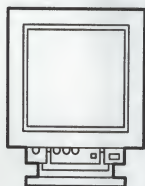


Warning: When the mode switch is in the NORMAL or SERVICE position, pressing the Reset button while the operating system is running can result in damaged or lost data. It is recommend that, when possible, you use the **shutdown** command to do a system shutdown before using the reset button.

- To initiate a reset, the button must be pressed twice in rapid succession.

The Reset button has two purposes. One is to initial program load (IPL) the system, when the mode switch is in NORMAL or SERVICE position. The other is to initiate the displaying of diagnostic messages, after a flashing 888 has been displayed in the three-digit LED display.

Adjusting the Display Screen



Most displays have a power switch and controls for screen brightness and contrast. On many displays, the power switch and the controls for brightness are located on the front of the display cabinet below the screen. Some display cabinets are equipped with a tilt feature that allows the user to position the display screen at a comfortable viewing angle.

While working at your display, adjust any available controls so that the screen image is sharp and at a comfortable viewing distance and angle.

Logging In

When the system is first shipped or installed, you will have a valid root login name (userid). If you are the system administrator and this is the first time you are logging in, use the login name `root` to complete the installation process, and setup other login names and passwords.

The following prompt on your screen indicates that the system is ready for you to log in:

login:

1. To log in, type your login name after this prompt and press Enter.
2. If the password prompt is displayed, type your password and press Enter. (Your password is not displayed on your screen.)

If you do not know what login name or password has been assigned to you, check with your system administrator.

What happens after you login depends on the state of the system:

| | |
|------------|---|
| Pre-loaded | If you have a preinstalled system and you also have AIXwindows installed, the initial login provides the AIXwindows user interface. |
| BOS | If you have installed only the base operating system, you receive the normal Korn shell interface. |

In either of the preceding cases, you can now use appropriate commands or utilities, including SMIT for system management. For more information about how to enter commands, refer to the *System User's Guide*.

If the login prompt is not displayed on your screen, verify that your system and your display are both turned on and that no one is already logged in at your display.

Logging Out

If you want to log out and leave your display ready for the next user:

1. Save all files you have modified and close all the processes that you have opened.
2. Press the Ctrl-D key sequence, or type `exit` and press Enter. After you log out, the system displays the login prompt.

Note: If you have multiple open windows or virtual terminals, the Ctrl-D key sequence may not close all of your windows and virtual terminals. You can enter `logout` on a command line to completely log out. The **logout** command, however, does not save open files.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The *System User's Guide* provides a basic overview of the system hardware and how to begin using the operating system.

The *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

NOTES

SMIT BASICS

Chapter 19. SMIT Basics

This chapter gives a brief overview on how to use the ASCII (non-graphical) version of the System Management Interface Tool (SMIT).

SMIT is a menu-based interface that allows you to do system management tasks by using menus instead of typing commands on a command line. If you have the AIXwindows environment installed, the Motif (graphical) version of SMIT is also available. However, since not all users have Motif SMIT on their systems, all of the installation procedures in this *Installation Guide* use the ASCII version of SMIT. Although the functions are essentially the same in an AIXwindows environment, the screen images presented in that version of SMIT are quite different. For more detailed information about how to use SMIT to manage your system, refer to the *System User's Guide* and the *System Management Guide*.

Note: If you have come here from an installation procedure, do *not* at this time perform any of the procedures contained in this chapter. Simply read this material to gain background information. The installation chapter that you are using will tell you when it is time to actually perform these procedures.

This chapter contains the following sections:

- Using SMIT in the ASCII Interface 19-2
- Menu Screens 19-3
- Dialog Screens 19-4
- Understanding Dialog Symbols 19-5
- Navigating SMIT Dialogs 19-6
- Function Keys 19-7
- Command Status Screens 19-8
- Related Information 19-8

Using SMIT in the ASCII Interface

If you are using an ASCII screen, the ASCII version of SMIT is activated by typing `smit` at the system prompt. If you are in AIXwindows, ASCII SMIT is started by typing `smit -C`. The system responds with a SMIT main menu. From this menu, you can select other menus that allow you to perform any number of tasks on your system. Through this selection and input process, the user is able to perform tasks that might otherwise require a large number of commands typed into the system. SMIT also has a fastpath feature. If you want to start at a specific menu instead of at the SMIT main menu, type `smit keyword`, where *keyword* is the name of a menu. For example, if you type `smit mkuser`, you will be taken directly to the "Create a User" screen.

There are basically three types of screens in SMIT:

- Menu screens
- Dialog screens
- Command status screens.

Menu screens contain lists of the different types of functions that can be performed. You select from the menus the type of task you want to perform. After one or more menu selections, a dialog screen will appear. On the *dialog screen*, there will be a number of selections or entry fields that allow you to specify exactly how you want the command to run. When you are done filling in the dialog screen, you press Enter and SMIT begins executing the command you have built. The *Command Status screen* then appears. This screen shows messages that occur while the command is running and then displays any output from the command.

Menu Screens

When you enter SMIT in ASCII mode, you are presented with the main SMIT menu screen similar to the following:

| | | | |
|--|------------|-----------|----------|
| System Management | | | |
| Move cursor to desired item and press Enter. | | | |
| Installation & Maintenance | | | |
| Devices | | | |
| Physical & Logical Storage | | | |
| Security & Users | | | |
| Diskless Workstation Management | | | |
| Communications Applications & Services | | | |
| Spooler (Print Jobs) | | | |
| Problem Determination | | | |
| Performance & Resource Scheduling | | | |
| System Environments | | | |
| Processes and Subsystems | | | |
| Applications | | | |
| Using SMIT (information only) | | | |
| F1=Help | F2=Refresh | F3=Cancel | F8=Image |
| F9=Shell | F10=Exit | Enter=Do | |

The first option, `Installation & Maintenance`, is highlighted. To choose an option from a SMIT ASCII menu or submenu, use the cursor keys to highlight the desired option and press the Enter key to select it.

Menu selections that do not execute commands immediately will lead you into submenus or dialog screens. Dialog screens offer text entry fields where the user supplies parameters.

Menu information that does not fit on one screen can be scrolled either by using the Up arrow, Down arrow, Home, End, Page Up, or Page Down keys.

Available SMIT functions are listed at the bottom of all SMIT ASCII screens.

When you are in a submenu or dialog that is longer than one screen, the following messages can appear:

- | | |
|-------------|--|
| [TOP] | Indicates the upper boundary of the text. |
| [BOTTOM] | Indicates the lower boundary of the text. |
| [MORE...nn] | Indicates that there are <i>nn</i> more lines hidden off screen. Use your scroll keys to view these lines. |

Dialog Screens

In a dialog screen, you supply the required parameters to specify how you want the command to run.

The following is an example of a SMIT ASCII dialog screen:

| Install Software at Latest Release Level | | |
|---|--------------|----------------|
| Type or select values in entry fields. Press Enter AFTER making all desired changes. | | [Entry Fields] |
| INPUT device / directory for software | /dev/rmt0.1 | > |
| SOFTWARE to install | [all] | + |
| Automatically install PREREQUISITE software? | yes | + |
| COMMIT software? | no | + |
| SAVE replaced files? | yes | + |
| VERIFY software? | no | + |
| EXTEND file systems if space needed? | yes | + |
| REMOVE input file after installation? | no | + |
| OVERWRITE existing version? | no | + |
| | | |
| F1 = Help | F2 = Refresh | F3 = Cancel |
| F5 = Undo | F6 = Command | F7 = Edit |
| F9 = Shell | F10 = Exit | F8 = Image |
| Enter = Do | | |

When a dialog screen appears, the first editable field name is highlighted and the cursor is waiting in the corresponding text-entry field. Available functions are listed at the bottom of the screen. Symbols appearing to the left of field labels or the right of text-entry fields indicate what kind of information is appropriate. When entries are complete, the Enter key commits your entry to the text-entry field or runs the command you have built.

Understanding Dialog Symbols

The following symbols are used to indicate various types of text entry fields:

| SYMBOL | MEANING |
|--------|--|
| [] | Indicates the beginning and end of an editable field. |
| < | Indicates there is more text to the left of the visible field. |
| > | Indicates there is more text to the right of the visible field. |
| + | Indicates either a list of choices or an option ring is available. Press the F4 key to display the entire list of options or use the Tab key to display options individually. |
| # | Specifies a numeric field. |
| X | Specifies a hexadecimal field. |
| / | Indicates that you must enter a file name. |
| * | Indicates that this field requires a value. |

Highlighted entry

Indicates a user-modified entry. A highlighted entry is in reverse video.

Command Status Screens

The following is an example of a SMIT ASCII command status screen:

```
COMMAND STATUS

Command: running      stdout: no      stderr: no

Before command completion, additional instructions may appear below.
```

After you have completed and committed a dialog, SMIT runs the command for you. A command status screen displays the results (output) of most SMIT commands. When SMIT starts executing a command the phrase `Command: running` is displayed at the top of the command status screen. SMIT uses the command status screen to display messages that occur while the command is running. The screen may also prompt you for any additional information it needs to execute the command. After the command is completed, the `Command: OK` message is displayed and the results of the command is shown on the screen. If for some reason the command could not run to completion, a `Command: failed` message will be displayed.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **smit** command.

The *System User's Guide* provides a basic overview of the system hardware and how to begin using the operating system.

The System Management Interface Tool (SMIT) Overview in *System Management Guide* explains the structure, main menus, and tasks that are done with SMIT.

The Managing the System with SMIT in *System Management Guide* explains how to use the System Management Interface Tool (SMIT) to perform system management tasks.

SYSTEM MESSAGES

Chapter 20. System Messages

This section lists system messages that may appear during the installation of your Version 3.2 Base Operating System (BOS) and optional software products. The system messages are listed in alphabetical order. Information about each message is organized in the following manner:

| | |
|-----------------------|--|
| System Message | The system message appears in bold type. |
| Explanation | Describes what is likely to have caused the system message to be displayed. |
| System Action | Describes what the system does after the message is displayed. |
| User Action | Suggests a possible resolution to the problem suggested by the system message. |

Note: If you believe that your problem is the result of a software defect (a bug), rather than a user error, refer to "Chapter 21. Recovery Procedures" for information on how to report defects.

bosmain: the `./fs.size` file does not exist or contains invalid information. This file contains information about the size and number of file systems to be created.

Explanation: The `.fs.size` file is the first file on any (BOS or mkysyb) image. This file contains the information required by the installation process to create the default file systems. Any image not containing a `.fs.size` file as the first file will not install.

System Action: The installation process returns to the Current System Settings menu.

User Action: Select or create another image and try the installation again.

bosmenus: The `/usr/lpp/bosinst/settings` file does not exist or is empty.

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: The `/usr/lpp/bosinst/settings` file contains the current install options. Installation cannot proceed without this file. The file is in the following format:

| | |
|---------------------|-------------------------|
| primary locale name | C (POSIX) |
| primary console | /dev/hft0 |
| installation device | /dev/rmt0 |
| destination disks | 00-08-00-00 00-00-08-00 |
| boot device | 00-08-00-00 |

System Action: If the `/usr/lpp/bosinst/settings` file does not exist or is empty, the installation process halts. Choosing option 1 results in more error messages.

User Action: You have several options:

- Choose option 1, enter the shell, and attempt to create `/usr/lpp/bosinst/settings` with the correct parameters. Note that the installation environment is very limited; the use of I/O redirection (`>`, `>>`) and `echo` is one way to create a file in this limited environment. For example, after entering the shell, enter the following commands:

```
echo "C (POSIX)" > /usr/lpp/bosinst/settings
echo "/dev/hft0" >> /usr/lpp/bosinst/settings
echo "dev/rmt0" >> /usr/lpp/bosinst/settings
echo "00-08-00-00 00-00-08-00" >> /usr/lpp/bosinst/settings
echo "00-08-00-00" >> /usr/lpp/bosinst/settings
exit
```

OR

- Reboot from the same media and attempt the installation again.

OR

- Follow your local problem reporting procedures.

bosset: No hard disks can be accessed.

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: No hard disks are configured on the system. Consequently, the installation process cannot begin. Choosing option 1 displays the Main Installation menu, but no installation can take place until the problem is resolved. Choosing option 2 allows you to enter a limited function shell. View the devices that the configuration process located from this shell by typing the following: `cat /etc/objrepos/devs`.

System Action: Installation cannot begin until the problem is resolved.

User Action: You have two options:

- Turn the system off and check the following:
 - Check all SCSI devices to ensure that all SCSI addresses are unique.
 - Make sure the SCSI cards are properly terminated.
 - If external SCSI devices are in use, make sure that the SCSI chain is terminated and the devices are turned on.
 - Check the SCSI cabling and connections.
 - Reboot and attempt the installation again.

OR

- Boot from maintenance disks and run diagnostics.

**chfs was unsuccessful with return code X.
Could not complete network install of all loadable options.
Choose option 1 to continue.**

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: During a network install the installation process first loads the Base Operating System (BOS) and then archives all other loadable options in `/usr/sys/inst.images`. This error message results when the system cannot extend the size of the `/usr` file system to accommodate the loadable options.

System Action: The install process is suspended.

User Action: Continue with the installation by choosing option 1 and attempt to load the installable images after system reboot.

**This command only allows 256 mounted file systems during this process.
Please unmount unnecessary file systems before retrying.**

Explanation: During the installation process, the number of file systems mounted on your system reached the maximum limit of 256.

System Action: The installation process stops and this message is displayed.

User Action: Unmount any unnecessary file systems before restarting the installation process.

Could not position tape device to bos.obj tape mark.

Explanation: The installation of the operating system from a stacked tape (a bootable tape with multiple software images) was unable to position the tape at the location of the Base Operating System (BOS). This position is recorded in the stacked tape table of contents (TOC). The TOC is assumed to be the third image on all stacked tapes.

System Action: The installation process returns to the System Settings menu.

User Action: Ensure that the BOS image on the stacked tape is in the same position as listed in the table of contents. Otherwise, contact your service representative.

Could not position tape device to table of contents tape mark.

Explanation: The installation of the operating system from a stacked tape (a bootable tape with multiple software images) failed in its attempt to locate the table of contents (TOC). The TOC records the tape position of the Base Operating System (BOS) and other installable images. Without the TOC, the installation process is unable to locate and install the BOS or other images.

System Action: The installation process has returned to the System Settings menu.

User Action: Recreate your tape with a valid table of contents or contact your service representative.

If you have another system installed, access InfoExplorer for an explanation of how to recreate your tape.

Could not retrieve .fs.size from the network install server. The ./fs.size file does not exist or contains invalid information. This file contains information about the size and number of file systems to be created.

Explanation: The **.fs.size** file is the first file on any BOS or **mksysb** image. This file contains the information required by the installation process to create the file systems. Any image not containing a **.fs.size** file as the first file will not install.

System Action: The installation process returns to the System Settings menu.

User Action: Select or create another image and try the installation again.

The file systems which will be created will require \$tot_lv_size megabytes. The total amount of space available on the hard disks which you have selected is \$tot_disk_avail megabytes.

Please choose enough hard disk storage from the CURRENT SYSTEM SETTINGS menu. Press Enter to continue...

Explanation: You have more than 8MB of memory, but you did not select enough hard disk storage space to successfully install the Version 3.2 Base Operating System (BOS).

System Action: The installation stops and the system message is displayed.

User Action: You must select more hard disk storage space from the Current System Settings menu.

1. After the system message is displayed, press Enter. A screen similar to the following displays:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the Base Operating System. If these settings are correct type 0 and then press Enter to begin the installation.
To change a setting, type the number of the setting and then press Enter

| | |
|---|-------------------------|
| 1 LOCALE | CURRENT CHOICE |
| 2 INPUT Installation Device | C (POSIX) : |
| 3 DESTINATION Disks | Tape: /dev/rmt0.1 |
| 4 STARTUP (Boot) Device | 00-08-00-01 00-08-00-00 |
| | 00-08-00-01 |
| 99 Return to previous menu | |
| 0 Install the Base Operating System with the current settings | |

Type the number for your selection, then press Enter: 0

2. Type 3 and press Enter to select **DESTINATION Disks**. A screen similar to the following displays:

CHANGE DESTINATION HARD DISK(S)

Select the Destination Hard Disk(s). If necessary, more than one hard disk may be selected. To cancel a selection, enter the number a second time. Asterisks (*) denote disks belonging to an existing volume group.

| | |
|---|-------------|
| | LOCATION |
| 1 | 00-08-09-99 |
| 2 | 01-08-09-99 |

99 Return to previous menu
0 Commit current choice and return to Settings menu

Type the number for your selection, then press Enter: 0

3. Enter the number of the hard disk where you want to install your software. You can select multiple disks. To cancel a selected hard disk, enter the number for that disk.
4. When you have finished selecting disks, enter 0.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

5. Press Enter to continue the installation.

The file systems which will be created will require \$tot_lv_size megabytes. The total amount of space available on the hard disks which you have selected is \$tot_disk_avail megabytes.

Please extend the current root volume group from option 3 of the CURRENT SYSTEM SETTINGS menu. Press enter to continue...

Explanation: You have only 8MB of memory, and you did not select enough hard disk storage space to successfully install the Version 3.2 Base Operating System (BOS).

System Action: The installation stops and the system message is displayed.

User Action: You must extend the current root volume group from the Current System Settings menu.

Warning: When you select a hard disk to extend your root volume group, *all data on that hard disk is destroyed*. Also, if the disk you select is part of another volume group, *all data associated with that volume group is destroyed*.

1. After the system message is displayed, press Enter. A screen similar to the following displays:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the base operating system. If these settings are correct type 0 and press Enter to begin the installation.
To change a setting, type the number of the setting and then press Enter

| | |
|---|-------------------------|
| 1 LOCALE | CURRENT CHOICE |
| 2 INPUT Installation Device | C (POSIX) : |
| 3 EXTEND current root VG | Tape: /dev/rmt0.1 |
| | 00-08-00-01 00-08-00-00 |
| 99 Return to previous menu | |
| 0 Install the base operating system with the current settings | |

Type the number for your selection, then press Enter: 0

Depending upon the type of installation you are performing, the choices on this menu may vary.

2. Select **EXTEND current root VG**. The system lists all of the hard disks on your system that are *not* part of the current root volume group. A screen similar to the following displays:

EXTEND THE CURRENT ROOT VOLUME GROUP

Select one or more disks to add to the current root volume group.
To cancel a selection, enter the number a second time. Asterisks (*) denote disks belonging to an existing volume group.

| | LOCATION |
|---|-------------|
| 1 | 00-08-09-99 |
| 2 | 01-08-09-99 |

99 Return to previous menu
0 Commit current choice and return to Settings Menu

Type the number for your selection, then press Enter: 0

3. Enter the number for the hard disk you want to add to your root volume group. For example to select hard disk 01-08-09-99 as shown in the screen above, enter 2.
4. Enter 0 to continue the installation. A screen similar to the following displays:

FINAL WARNING

Select the number of the desired action

Base Operating System installation will destroy all data in usr (**/usr**), temporary (**/tmp**), and root (**/**) file systems of the selected root volume group.

ALL data will also be destroyed on the disks used to extend the current root volume group. Furthermore, if the disks used to extend the current root volume group were members of another volume group then the second volume group will also be destroyed.

99 Return to previous menu
0 Continue with installation

Type the number for your selection, then press Enter: 0

The installation should complete successfully. If it does not, contact your System Support representative.

<funcname> pid Killed.

(where <funcname> is the name of the parent function being executed and pid is the process id of the process being killed.)

Explanation: A process was automatically killed due to software library incompatibilities. This is seen most often when the boot software, the installation software, and the software to be installed are not the same version number. For example, you see this message when using an Version 3.1 Boot diskette to install Version 3.2 software.

System Action: Killed messages are displayed until a critical failure suspends the installation process.

User Action: You have several options:

- Locate a set of compatible software.
OR
- If attempting a **mksysb** image installation then on the same system from which the **mksysb** image was created, make a set of Boot, Display and Install/Maintenance diskettes on the appropriate media and try the installation again.
OR
- Follow your local problem reporting procedures.

getbos: Software installation failed.

Option 1 allows you to try the server again, select a different server, or select a different bos.obj.

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: The network transfer of the Base Operating System (BOS) failed. Probable reasons for failure include network failure or a corrupt BOS image.

System Action: The installation process has halted.

User Action: The only recourse available is to choose option 1.

This option displays the Network Settings menu from which the network parameters can be adjusted and a server contacted. Once the server is contacted, the same or a different BOS image can be selected.

Continued failure probably indicates a corrupt BOS image or network problems.

The install process has encountered the following error: blvset failed with return code X.

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: Near the end of the installation process, the **blvset** command is run to save the installation setting to disk. The information saved is used during the next installation to provide the default settings.

System Action: The install process is suspended.

User Action: Choosing option 1 allows the installation process to complete. There are virtually no maintenance options in this situation. Option 1 will not delete any critical data.

The install process has encountered the following error: bosboot failed with return code X.

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: The installation process failed while trying to initialize the boot area on the disk.

System Action: The installation process is suspended.

User Action:

1. Choose option 2.
2. Enter the following command: `bosboot -a -d /dev/hdiskX` where *X* is the number of the disk containing the boot logical volume.
 - If the command is successful, enter `exit` to continue.
 - If the command failed, call your service representative.

The install process has encountered the following error: **chcons** failed with return code X.

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: The **chcons** command was run to assign the primary display. The primary display is the display chosen from the installation menus.

System Action: The install process is suspended.

User Action: Choose option 1 to continue. The current console will be the primary console during the next boot.

The install process has encountered the following error: **cp /etc/filesystems /tmp/filesystems** failed with return code X.

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: The installation process attempts to save a copy of **/etc/filesystems** to be restored as **/etc/filesystems.old** when the installation is complete.

System Action: The install process is suspended.

User Action: Choosing option 1 results in the loss of the previous systems **/etc/filesystems**, but does not affect the outcome of the installation.

The install process has encountered the following error: tar failed with return code X.

A screen similar to the following displays:

ID# OPTION

1 Continue

2 Perform System Maintenance and Then Continue

Enter ID#

Explanation: The installation process could not read the tape.

System Action: The installation process is suspended.

User Action: You have several options:

- Check the functionality of the tape drive by reading another tape. If this fails, reboot and try another tape drive.

OR

- Ensure that the installation image is readable by **tar**.

OR

- Assuming the tape is positioned at the beginning of the image, the following command reads, but does not extract files from the tape: `tar -tvf/dev/rmtX`, where *X* is the tape drive number (for example, `rmt0`). If the above command fails and the tape drive is functioning, reboot and try another tape.

OR

- Follow your local problem reporting procedures.

The install process has encountered the following error:
tar -xf-b1 ./fs.size failed with return code X.

Explanation: The installation process could not read installation media during its attempt to retrieve the **./fs.size** file. The **./fs.size** file is the first file on any (BOS or **mksysb**) image. This file contains the information required by the installation process to create the default file systems. The installation cannot continue.

System Action: The installation process returns to the System Settings menu.

User Action: You have several options:

- Check the functionality of the installation device.

OR

- From another system, ensure that **./fs.size** is the first file on the image. The following command reads the **./fs.size** file from the media if it exists:

```
tar -xf/dev/input_device ./fs.size
```

(where *input_device* is the name of the tape or diskette drive from which you are installing in the form **/dev/fdo** [diskette] **/dev/rmt0** [tape].

OR

- Follow your local problem reporting procedures.

installp: Unable to expand file system /usr.
Check available disk space. 508 1024-character byte blocks are required.

Explanation: You interrupted the installation of your optional software.

System Action: Sometimes, when an installation is interrupted, the system locks the root volume group.

User Action: You must unlock the root volume group. Then attempt the installation procedure again.

To unlock a root volume group:

1. Be sure you have logged in as root.
2. Enter `odmdelete -q "name=rootvg and attribute=lock" -o CuAt.`
3. Enter `putlvodm -K getlvodm -v rootvg.`
4. Enter `smit` and press Enter to attempt to install your optional software products again.

**installp: An error occurred during bosboot processing.
Please correct the problem and rerun. 301-153 /bootrec not found.
301-165 bosboot: WARNING! bosboot failed - do not attempt to boot device.**

Explanation: The **bosboot** command was unable to finish processing because the file **/bootrec** is missing. This file is required by the bosboot program.

System Action: The bosboot process is interrupted.

User Action: Create the **/bootrec** file and complete the installation process.

To create the file and complete the installation:

1. Note the message preceding this one. Either the message **bosboot verification starting** or **bosboot startup starting** will precede this message.
2. Enter **touch /bootrec** to create the **/bootrec** file.
3. If the message **installp: An error occurred during bosboot processing** was displayed after the message **bosboot verification starting**, rerun the installation procedure.

OR

If the message **installp: An error occurred during bosboot processing** was displayed after the message **bosboot startup starting**, enter **install -C**. Continue the installation process.

**installp: An error occurred during bosboot processing.
Please correct the problem and rerun. 301-155 bosboot mkfs failed for /dev/hd5.
301-165 bosboot: WARNING! bosboot failed - do not attempt to boot device.**

Explanation: The **bosboot** command was unable to finish processing because required commands were not found.

System Action: The bosboot process is interrupted.

User Action: Check your **\$PATH** environment and complete the installation process.

To check the file and complete the installation:

1. Note the error message preceding this one. Either the message **bosboot verification starting** or **bosboot startup starting** will precede this message.
2. Compare your **\$PATH** variable with the **\$PATH** variable found in **/etc/environment**.
3. If there are discrepancies, edit your **\$PATH** to reflect the data contained in **/etc/environment**.
4. If the message **installp: An error occurred during bosboot processing** was displayed after the message **bosboot verification starting**, rerun the installation procedure.

OR

If the message **installp: An error occurred during bosboot processing** was displayed after the message **bosboot startup starting**, enter **install -C**. Continue the installation process.

Invalid table of contents.

Explanation: The installation of the operating system from a stacked tape (a bootable tape with multiple software images) was unable to verify the validity of the tape table of contents (TOC). A valid TOC has a numeric string in the following format: `single_digit_number 12_digit_number single_digit_number` as the first entry in the TOC. For example, `1 042309235291 1` is a valid TOC header. The TOC records the tape position of the Base Operating System (BOS) and other installable images. Without a valid TOC, the installation process cannot locate and install BOS or the other installable images.

System Action: The installation process returns to the System Settings menu.

User Action: Recreate your tape with a valid table of contents or contact your service representative.

If you have another system installed, access Info Explorer for an explanation of how to recreate your tape.

The media contains an image designed for installing the base operating system.

Explanation: You have chosen Install the operating system from media that was created with the 'smit startup' or 'mkysyb' command. However, the media you are installing from contains a Base Operating System (BOS) image. A **mkysyb** image is an installable backup (**tar** format) of a root volume group. This type of image can be created via the **smit startup** command or the **mkysyb** command. Options 1 and 2 on the main installation menu determine the installation type. Consequently, the installation media must contain the corresponding image type (**mkysyb** or BOS).

System Action: Installation cannot begin until the problem is resolved.

User Action: You have several options:

- Provide a **mkysyb** image and continue with installation.
OR
- Return to the Main Installation menu, select the option to install the operating system from factory media (option 1), and continue with the installation.
OR
- Follow your local problem reporting procedures.

The media contains an image designed for installing a mksysb image.

Explanation: You have chosen Install the operating system from factory media, but the media contains an image that is an installable backup (**tar** format) of a root volume group. This type of image is created with the **smit startup** or the **mksysb** commands. Options 1 and 2 on the main installation menu determine the installation type. Consequently the installation media must contain the corresponding image type (**mksysb** or **BOS**).

System Action: The install process has returned to the Current System Settings menu.

User Action: You have several options:

- Provide a BOS image and continue with installation.
OR
- Return to the Main Installation menu, select the option to install a **mksysb** image (option 2), and continue with the installation.
OR
- Follow your local problem reporting procedures.

No disks are available.

Explanation: No hard disks are configured on the system. Consequently, the only functioning menu option is the maintenance option. The devices that the configuration process was able to locate are listed in **/etc/objrepos/devs**.

System Action: Installation cannot begin until the problem is resolved.

User Action: You have several options:

- View the devices file from the maintenance shell by typing the following command:

```
cat /etc/objrepos/devs.
```


OR
- Turn the system OFF and check the following:
 - Check all SCSI devices to ensure that all SCSI addresses are unique.
 - Make sure the SCSI cards are properly terminated.
 - If external SCSI devices are in use, make sure that the SCSI chain is terminated and that the devices are turned on.
 - Check the SCSI cabling and connections.
 - Reboot and attempt the install again.
OR
- Boot from diagnostics diskettes, and check the hard disks.
OR
- Follow your local problem reporting procedures.

No entry for bos.obj in the table of contents.

Explanation: The installation of the operating system from a stacked tape (a bootable tape with multiple software images) was unable to locate an entry for a Base Operating System (BOS) image in the tape table of contents (TOC). Without a BOS entry in the TOC, the installation process cannot locate and install the BOS image.

System Action: The installation process returns to the Current System Settings menu.

User Action: Ensure that the BOS image on the stacked tape is in the same position as listed in the table of contents. Otherwise, contact your service representative.

The /usr/lib/nls/ILS file does not exist or is empty.

Explanation: The file `/usr/lib/nls/ILS` lists locale configuration data.

System Action: Due to the missing file, the Change Locale menu cannot be accessed.

User Action: Continue with installation, ignoring error messages concerning the lack of locale data. After system installation is complete, reboot the system and use the **installp** command to install the desired locale.

**installp: An error occurred during bosboot processing.
Please correct the problem and rerun.
0301-52 bosboot: not enough file space to create: /tmp/disk.image.**

OR

0301-152 bosboot: not enough file space to create: /tmp/unix.

Explanation: The **bosboot** command was unable to finish processing because of insufficient space in **/tmp**.

System Action: The bosboot process is interrupted. The error message, the amount of disk space required, and the available disk space are displayed. The disk space required indicates the number of 1024 KB blocks required.

User Action: Free up space in the **/tmp** file system or extend the **/tmp** file system. Continue or restart the installation process.

To resize the **/tmp** file system and complete the installation:

1. Note the error message preceding this one. Either the message **bosboot verification starting** or **bosboot startup starting** will precede this message.
2. Change directories to **/tmp**. List the files and determine which can be deleted. If there is sufficient space available, go to step 6. If you need to expand **/tmp**, continue this procedure.
3. Enter **smit chfs**.
4. Select the **/tmp** file system from the displayed list.
5. Add the additional block space required. The **smit chfs** command requires disk space to be defined in 512 KB blocks. Double the required disk space displayed in the system message.
6. If the message **installp: An error occurred during bosboot processing** was displayed after the message **bosboot verification starting**, **rerun the installation procedure**.

OR

If the message **installp: An error occurred during bosboot processing** was displayed after the message **bosboot startup starting**, **enter install -C**. Continue the installation process.

**installp: An error occurred during bosboot processing.
Please correct the problem and rerun. 653-358 Cannot create /var/tmp/blv.
301-152 bosboot: not enough file space to create: /var/tmp/blv.**

Explanation: The **bosboot** command was unable to finish processing because of insufficient space in **/var**.

System Action: The bosboot process is interrupted. The error message, the amount of disk space required, and the available disk space are displayed. The disk space required indicates the number of 1024 KB blocks required.

User Action: Free up space in the **/var** file system or extend the **/var** file system. Continue or restart the installation process.

To resize the **/var** file system and complete the installation:

1. Note the message preceding this one. Either the message `bosboot verification starting` or `bosboot startup starting` will precede this message.
2. Change directories to **/var**. List the files and determine which can be deleted. If there is sufficient space available, go to step 6. If you need to expand **/var**, continue this procedure.
3. Enter `smit chfs`.
4. Select the **/var** file system from the displayed list.
5. Add the additional block space required. The **smit chfs** command requires disk space to be defined in 512 KB blocks. Double the required disk space displayed in the system message.
6. If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot verification starting`, rerun the installation procedure.

OR

If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot startup starting`, enter `install -C`. Continue the installation process.

RECOVERY
PROCEDURES

Chapter 21. Recovery Procedures

This chapter contains the following four sections:

- Recovering from a Remote /usr Mount Failure 21-2
- Accessing a System That Will Not Boot 21-4
- Cleaning Up after a Failed Optional Software Installation 21-12
- Reporting Software Defects 21-16

Recovering from a Remote /usr Mount Failure

Use this procedure if you are unable to mount the **/usr** file system from your remote **/usr** server after installing your Version 3.2 Base Operating System.

Prerequisite Tasks and Conditions

1. Your remote **/usr** client cannot mount the remote **/usr** server's **/usr** file system.
2. Knowledge of the **vi** editor.

Diagnosing the Problem

The minimal **/usr** filesystem that is mounted when the remote **/usr** filesystem is not available contains network utilities and the **vi** editor for use in error recovery. Execute these commands to diagnose your situation:

PROCEDURE:

1. To verify that the IP address for the remote **/usr** server is correct in the **/etc/filesystems** file, type the following:

```
grep -p ^/usr: /etc/filesystems
```

and press Enter.

If the server's IP address is incorrect, use the **vi** editor to correct the entry in the **/etc/filesystems** file and reboot the system in order to attempt the remote **/usr** mount again.

If the server's IP address is correct, continue with step 2.

2. To verify that the IP address for the remote **/usr** server is correct in the **/sbin/net.info** file, type the following:

```
cat /sbin/net.info
```

and press Enter.

This is the second field on the single line in this file.

If the address is not correct, use the **vi** editor to correct the entry in the **/sbin/net.info** file and reboot the system in order to attempt the remote **/usr** mount again.

If the server's IP address is correct, continue with step 3.

3. Using the IP address for the remote **/usr** server, verify the network connection with the **ping** command.

For example, if the server's IP address is 197.2.47.47, you would type:

```
ping 197.2.47.47
```

and press Enter.

If the **ping** command cannot reach the server, then try to ping a different machine on the network that you are certain is up and running. If that machine cannot be contacted, then the network connection for the client may be faulty. If you can ping the machine that you know is running, then the network connection for the server may be faulty.

4. If the **ping** command succeeded in contacting the server, then try to mount the remote **/usr** file system.

For example, if the servers IP address is 197.2.47.47, you would type:

```
mount 192.2.47.47:/usr /mnt
```

and press Enter.

If this command fails, refer to the section titled "Preparing and Updating the /usr Server" in "Chapter 5. BOS Installation for Use with a /usr Server." This section provides information about how to correct the condition that prevents the client from mounting the **/usr** file system. After you have corrected the remote **/usr** server's configuration, reboot the client in order to attempt the remote **/usr** mount again.

17. To select **Start a limited function maintenance shell**, type the following:

4

and press Enter.

A screen similar to the following displays:

Type 'exit' to return to main menu.

Use the `getrootfs` command to access the file systems
that reside on the root volume group.

#

18. At the system prompt (`#`), type the following:

`getrootfs`

and press Enter.

A screen similar to the following displays:

Available disks:

| PV_NAME | BOOT DEVICE | PVID | VOLUME GROUP ID |
|---------|-------------|------------------|------------------|
| hdisk0 | YES | 000000006d1520c9 | 000000006d159f6e |
| hdisk1 | NO | 000000006d157ab7 | 000000006d159f6e |

#

19. To access your disk-resident file system, type the following:

```
getrootfs pv_name
```

(where `pv_name` is a bootable device listed in step 18.)
and press Enter.

20. Refer to the *Problem Solving Guide and Reference* to diagnose your problem.

Reporting Software Defects

The procedures in this section explain how to report any software defects that you find in AIX Version 3.2.

Introduction

If you encounter a problem that you feel is a defect, you should contact the appropriate support center listed on the Help Information page in the front of this manual.

You will be asked for your customer number and the software product name or number. A Problem Management Record (PMR) will be created for you and you will be given a PMR number in the format #####,B###.

A specialist will then work with you to analyze your specific problem.

If your problem is a known problem (rediscovery), a circumvention or problem temporary fix (PTF), if available, will be given to you. If your problem has not been previously reported, the specialist may request that you provide additional details. In some instances, it will be necessary to also have you submit a file that contains information about the configuration of your system. There are two commands that will assist you in compiling this information.

- `lslpp -hBc > filename`

The output of the **lslpp** command will be used by the specialists at the support center to build the exact operating system and lpp level of your machine.

- `snap`

The **snap** command will take a snapshot of your system configuration, allowing quicker problem determination. It will allow you to gather information in specific areas, save the output to a file, and view the output. The **snap -c** command will compress the output into a tar file. The **snap -o** command will download the tar file to removeable media. For more information, see the section titled "snap Problem Determination Tool."

If you are asked to provide this additional information, refer to the next section, "How to Ship Problem-Determination Materials."

How to Ship Problem-Determination Materials

World Trade Customers:

Contact your country's support structure for shipping instructions.

United States Customers:

Austin Support Center Shipping Addresses and Telephone Numbers

All files and media sent should be appropriately labeled with the PMR and branch office number on them, along with the commands needed to remove the information from the media.

Standard Mail, mailing address (except FEDERAL EXPRESS and AIRBORNE):

IBM Corp.
11400 Burnet Road
Austin, TX 78758-2900
attn: V3TESTCASE, Dept. W51

FEDERAL EXPRESS and AIRBORNE, mailing addresses:

IBM Corp.
11400 Burnet Road
Building 042
Austin, TX 78758-2900
attn: V3TESTCASE, Dept. W51

FAX number:

(512) 823-7634

VNET, VM userid and nodeid:

V3DEFECT@AUSVM8

Internet/UUNET, electronic address:

mail nsd%aixserv@uunet.UU.NET

UUCP phone number and login:

(512) 823-7652
2400,N,8,1
login: nuucp
passwd: testcase

Austin Support Center: 1-800-237-5511

snap Problem Determination Tool

The **snap** command will assist you in compiling system configuration information quickly and easily. Once this information is compiled, you may view it or compress it for downloading to diskette or tape or for remote transmission. You may be asked by support specialists to execute the **snap** command to assist them in accurately identifying your system's problem.

Disk Space Requirements

Approximately 8 megabytes of temporary disk space is required when executing *all* of the **snap** options on an average system. If only one or two options are chosen, the disk space required will be substantially less, depending on the option. The program will automatically check for free space in the **/tmp/ibmsupt** directory or the directory specified with the **-d** flag. If there is not enough space, you will have to expand the filesystem. You may suppress this free space check by using the **-N** option.

Output Directory

The default directory for the output from the **snap** command is **/tmp/ibmsupt**. If you desire to name an optional directory, use the **-d** option with the path of the desired output directory. Each execution of the **snap** command will append to previously created files. See the section titled "Cleaning Up after a Failed Optional Software Installation" for instructions on cleaning up the files.

Execution Permissions

Only root has execute permissions for this command.

Cleanup

The cleanup option, **-r**, should be used to remove the information saved by the **snap** command and to retrieve disk space.

Options

The main options of the **snap** command are as follows:

-g Gathers the output of **lspp -hBc** command, which will be required by support specialists in order to recreate your exact operating system environment, if other problem determination techniques fail. Output is in **/tmp/ibmsupt/general/lspp.hBc**. Also, the **-g** flag gathers general system information and outputs it to **/tmp/ibmsupt/general/general.snap**.

-D Gathers dump and **/unix** (assumes dump device to be **/dev/hd7**).

-a Gathers information for all of the groups.

-c Creates a compressed tar image of all files in the **/tmp/ibmsupt** directory tree (or other output directory.)

Note: Other information that is not gathered by the **snap** command may be copied to the **snap** directory tree before executing the **tar/compress** option.

For example, you may be asked by the support specialist to provide a testcase demonstrating the problem. The testcase should be copied to the **/tmp/ibmsupt** directory. When the **-c** option of the **snap** command is executed, the testcase will be included.

-o Creates a tar file and downloads it to removable media.

-v View the output of the commands executed by the **snap** command.

Before executing the **snap -c** or **snap -o** commands, any additional information required by the Support Center should be copied to the **/tmp/ibmsupt/testcase** directory (or an alternate directory).

The **snap -c** and **snap -o** commands are mutually exclusive. Do not execute both during the same problem-determination session. The **snap -c** command should be used to transmit information electronically. The **snap -o** command should be used to transmit information on a removeable output device.

For instructions on how to gather information on selected groups (Kernel, Printer, SNA, NFS, TCP/IP, security, async, language, and filesystem), follow the instructions in the next section, "View the Usage Instructions."

View the Usage Instructions

At the system prompt, type the following:

`snap`

and press Enter.

Recovery

If you suspect that a command being executed by the **snap** command is hung due to an inaccessible server, execute `<ctrl> c`. You will be prompted to input your choice of desired action:

| | |
|-------|---|
| Enter | For no action, return to current operation. |
| s | To attempt to kill current operation. |
| q | To quit snap completely. |

NOTES

Chapter 22. Notes

Be sure to file the following items in this section:

- Documentation accompanying installation or update media
Documentation is shipped with each new release of AIX. It discusses the enhancements and fixes provided by the new release.
- Technical Newsletter (TNL) Cover Letter
This cover letter comes with each TNL (change package) and lists the pages that should be replaced in the *Installation Guide*.
- *Upgrade Utilities Guide for Upgrading AIX Version 3.1.x to Version 3.2*
This document describes how to upgrade your AIX Base Operating System (BOS) from any release of Version 3.1 to the current release of Version 3.2.
- Any other information that is pertinent to the process of installing and updating your system.

Appendix A. Optional Software Installation and Update Concepts

The information in this appendix is intended to supplement the optional software and service updates installation procedures described in “Chapter 6. Optional Software Installation,” “Chapter 7. Service Updates Installation,” and Part 3: Installing and Updating Optional Software of “Chapter 10. Diskless System Installation.” By understanding the concepts presented in this appendix, you can gain a greater control over the optional software products and service updates installed on your system.

If, at this time, you do not wish to concern yourself with all of the details of optional software installation, you can follow the directions in this appendix and accept the defaults for steps you do not understand. However, it is recommended that you first read this appendix to familiarize yourself with the basic terms and concepts. Then, as you learn more about installing optional software and service updates, you can review this appendix in more detail and take full advantage of the flexibility offered by the installation process.

This appendix covers the following topics:

- Packaging of Software Products A-2
- Software Product Identification A-3
- Applying, Committing, and Rejecting Software Products and Updates A-3
- Specifying an Alternate Save Directory A-4
- Error Messages and Output for the installp Command A-6
- Cleaning Up after a Failed Installation A-8
- Reinstalling a Software Product A-8
- Installing Version 3.1-Formatted Software Products A-8
- Creating Installation Images on a Hard Disk A-9
- Updating Software in Version 3.2 A-9
- Explanation of Requisites and Dependents A-10
- Superseded Updates A-11
- Software Inventory and the Software Vital Product Data A-12
- Related Information A-15

- **Commit**

When you commit software, you are making a commitment to that version of the software product. When you commit a product, the saved files from all previous versions of the software product are removed from the system, thereby making it impossible to return to a previous version of the software product. In SMIT, software can be committed at the time of installation by setting the `COMMIT software?` question to `yes` (or by using the `-ac` flags with `installp`). Note that committing already applied software does not change the currently active version of a software product. It merely removes saved files for previous versions of the software product.

For Version 3.1, updates could be just applied, but software products were always committed when they were installed. Although the Version 3.2 will now allow a Version 3.2 software product to be applied without being committed, the rejection of the installation level of the product will *not* have the same meaning as the rejection of updates to the product.

From the SMIT installation menus, selecting a `yes` answer to the `COMMIT software?` question will cause the software to be installed (applied) and then committed. A software product that has been previously installed but was not committed when it was installed, may be committed via the SMIT menu Commit Applied Software (Remove Previous Version). From the command line, the commit action is taken by using the `-c` flag with `installp`.

- **Reject**

When you reject an applied software product, the software product's files are removed from the system, and the Software Vital Product Data (SWVPD) information is changed to indicate that the product has been removed from the system. System configuration information for the product is also cleaned up, but this is dependent on the product and may not always be complete. If a previous version/release/level of the product was installed on the system, the system will not resume using that previous version.

When you reject an applied update, the rejected update's files are removed from the system. The version of the product previous to the update becomes the active version. A point to keep in mind is that any dependent updates that were applied after the rejected update are also removed from the system if the SMIT menu question `REJECT versions that depend on above version?` is answered `yes` (the `-g` flag of `installp`).

The SMIT menu Reject Applied Updates (Use Previous Version) may be used to reject updates. The menu Remove Applied Software Products must be used to reject software products. From the command line, the reject action is taken for both products and updates by using the `-r` flag with `installp`.

Note that the actions of applying or rejecting a version of a software product both change the currently active version of that product. The action of committing does not change the currently active version of that product.

Specifying an Alternate Save Directory

The SMIT option, `ALTERNATE save directory`, specifies an alternate location for a save directory that holds files being replaced by an update. This option is primarily useful in the following two circumstances.

- You have enough local disk space for saving replaced files but you do not want to permanently expand the root and `/usr` file systems.

In this case, you can choose to create a separate file system for the alternate save directory. Once you are satisfied with the updated system and have committed all applied updates, disk space can be retrieved by deleting the save file system.

- If you do not have enough local disk space for saving replaced files but you have access to ample disk space on a remote system, then you can specify a directory that is mounted from a remote file system.

It is recommended that if a remote file system is used, you should commit the installation as soon as possible. You may want to initiate the installation action as an apply and commit operation (**-ac** flags). If you want to apply only in order to retain the capability of rejecting any unwanted updates, then it is highly recommended that you test the newly installed updates as soon as possible and then commit or reject them.

Described below are considerations that you should take into account when using an alternate save directory.

- It is recommended that you use the same alternate save location on each invocation of the **installp** command.
- If an alternate save directory is used for an apply operation, you should make sure that the file system containing that directory remains mounted. It is highly recommended that any necessary mounts be done automatically on a reboot.
- If an alternate save directory is missing on a commit operation, the commit takes place, and a warning is given stating that the save directory could not be deleted. It is then your responsibility to delete the save directories that are no longer used in order to retrieve that disk space.
- If an alternate save directory is missing on reject, the reject operation cannot be done because the saved files are missing. An error is given, and the entire installation operation is cancelled. If the missing save directory is not caused by a temporary situation (for example, the inability to contact a remote directory on the network,) your only options are to commit the updates or leave them in an applied state permanently.
- When doing a system backup, you are responsible for backing up any alternate save directories that do not reside in the root volume group.
- The installation process safeguards users with a remote save directory from the possibility of two different systems using the same remote directory. However, you should use directory pathnames that easily and uniquely identify each user's system. For example, you might add the system's hostname somewhere in the pathname.
- Do not create a **mksysb** backup of a system with a remote save directory and then try to restore the **mksysb** image onto a system other than the original. In this case, using a **mksysb** image to install several like systems causes multiple ownership of the same remote save directory.

In addition to the considerations described above, the restrictions that follow apply in a diskless workstation environment:

- If a system's **/usr** file system is being used as the Shared Product Object Tree (SPOT) server in a diskless workstation environment, and if the system uses alternate save directories during installation, that SPOT must never be administered from a superclient.
- A system's **/usr** file system must never be used as the input device for a **mkspot** command if the system uses alternate save directories during installation.

Cleaning Up after a Failed Installation

The SMIT menu Clean Up After a Failed Installation can be used to clean up after a failed installation (or use the **installp -C** command).

When you use the cleanup action, an attempt is made to remove all incomplete pieces of any product for which an installation was abnormally terminated while in process. This includes any product in the state of applying, committing, or rejecting. When a product is in one of these states, no other installation action can be taken on any product until cleanup is performed. An attempt is also made to revert to the previous version of the product as the currently active version. If this cannot be done, the product will be marked as broken. Unpredictable results can occur if you attempt to use a broken product. Therefore, it is advisable to reinstall any broken products or updates.

In general, the cleanup operation is automatically performed if an installation cannot be completed because of failure or interruption. When an installation is run from the SMIT menus, any necessary cleanup is always attempted. When **installp** is run from the command line, any necessary cleanup will be attempted unless the **-Tk** option is used. However, it still might be necessary occasionally to do a separate cleanup operation because there are times when it is not possible to do an automatic cleanup, such as if the system power goes down during an installation.

Reinstalling a Software Product

If you attempt to install the product level of a software product that is already installed on the system, then you are reinstalling the product. In order to reinstall a product, it must be in the committed or broken states. Also, in general, the level of the product being installed must be later than the level of the product already installed on the system. If you wish to install a level of a product that is the same as or earlier than the level of the product already installed on your system, then you must use **installp** from the command line and use the **-F** flag. The force option of **installp** is not available from the SMIT menus. It is not necessary to force the installation of a product that is marked broken even if the level being installed is not later than the level of the product on the system.

Installing Version 3.1-Formatted Software Products

The installation packages for software products have a different format in BOS Version 3.2 than they had in Version 3.1. This was necessitated by the file tree restructuring and by the packaging of products into share, usr, and root parts. The **installp** command is backwards compatible, and it will install the Version 3.1-formatted product packages onto a Version 3.2 system. These Version 3.1-formatted packages can be run in a standard environment just as in a Version 3.1 system. Version 3.1-formatted packages, however, cannot be installed in a client/server environment unless the software product owners have provided certain conversion files and routines to convert their products for use in a client/server environment.

For customers who have vendor products that are installed with the **installp** command, contact the vendor who owns the product or see the vendor documentation for specific instructions to determine whether the product can be converted to run in a client/server environment. For vendors who have products that are installed into a system with the **installp** command, see documentation in the *General Programming Concepts* manual on the "Software Product Installation Package Process" for information on the format of Version 3.2 installation packages and for information on the conversion of Version 3.1-formatted packages to run in the client/server environment.

Creating Installation Images on a Hard Disk

Installable image files (or installation packages) may be copied to the disk for use in future installations. Refer to "Chapter 9. Creating an Installation Server" for instructions on how to create installable image files from your installation media. These image files will be copied from your installation media (tape or diskette) to a directory on the disk so that they may be installed later using the disk directory as the input device. These files will be copied to a default directory named **/usr/sys/inst.images**. The image files within the disk directory will be named *prodname.part.level* where *prodname* is the name of the software product or update, *part* is *usr* for the usr and root parts of a product or *shr* for share parts, and *level* is the complete version number of the product, including the fix ID for update packages.

Updating Software in Version 3.2

Software that is distributed to fix a problem in a product is called an update. The SMIT menus Install Updates Only or Install Software With Updates are used to install updates. Updates are also installed with the **installp** command in Version 3.2.

When you install update packages on your system, if you choose to apply the updates (rather than commit them at installation time), you can reject those updates later. If you encounter a particular update that is causing problems in your system, you may reject that update without having to reject all the other updates that you installed. Once you have been running with an update or group of updates, and you are convinced that the updates have caused no problems, you may wish to commit those updates in order to retrieve the disk space that is used to save the previous levels of that software.

All software products have a version number and a release number that identify the release level of the product. In addition to this, product updates are assigned a modification level number and a fix level number to identify the level of the update. For Version 3.2-formatted updates, a new identifier called the fix ID has been added. For IBM products, the fix ID is a seven-character identifier that begins with "U4."

Each Version 3.2-formatted update package has a unique fix ID associated with it. The fix ID becomes a part of the product level for each software product option that is part of the update package. If the situation occurs where the fix for one problem spans across software products, then a separate fix ID is assigned to each software product update package. Thus, the fix ID is associated with the update packaging per product.

Software Inventory and the Software Vital Product Data

Information about the inventory of software products and product updates either installed or available to be installed on your system is maintained in the Software Vital Product Data (SWVPD) database. Information contained in the database includes the following:

- Name of the software product
- Level of the software product
- Names, checksums, and sizes of the files that make up an installed product
- Current state of the product

Database files for the Software Vital Product Data are stored in the following directories:

/etc/objrepos Information about the root part of the product.

/usr/lib/objrepos Information about the usr part of the product.

/usr/share/lib/objrepos Information about the share part of the product.

For more information about the SWVPD, see the "Software Vital Product Data (SWVPD) Overview" in the *General Programming Concepts*.

The SMIT Software Inventory menus provide you with information about the software installed on your system. These menus use the **lsipp** and the **lppchk** commands. The **lsipp** command lists information about the software products and updates installed on a system. The **lppchk** command verifies information about the files of an installed software product.

Following are several examples of output from the **lsipp** command. The **lsipp** command displays useful information about the products and updates on your system, and this is just a small sampling of the information that can be obtained. You may find it useful to use this command from the command line as well as accessing it through the smit menus.

The following output is an example of a list of all products installed on a system. It was obtained with the SMIT menu List All Installed Software (command **lsipp -l**) on a system that had only the Base Operating System and the bosnet product installed.

| Name | State | Description |
|-------------------------|-----------|--|
| Path: /usr/lib/objrepos | | |
| bos.obj | COMMITTED | The Base Operating System |
| bosnet.ncs.obj | COMMITTED | Network Computing System |
| bosnet.nfs.obj | COMMITTED | Network File System/NIS/RPC Libs & Utils |
| bosnet.snmpd.obj | COMMITTED | Simple Network Management Protocol Daemon (Agent) |
| bosnet.tcpiobj | COMMITTED | TCPIP Applications |
| Path: /etc/objrepos | | |
| bos.obj | COMMITTED | The Base Operating System |
| bosnet.ncs.obj | COMMITTED | Network Computing System |
| bosnet.nfs.obj | COMMITTED | Network File System/NIS/RPC Libs & Utils |
| bosnet.snmpd.obj | COMMITTED | Simple Network Management Protocol Daemon (Agent) |
| bosnet.tcpiobj | COMMITTED | TCPIP Applications |

The following output is an example of a list of all updates installed on the system for the **bosnet.tcpip.obj** product option. It was obtained using the SMIT menu List All Installed Software with **bosnet.tcpip.obj** entered for the SOFTWARE name field on that menu (command **lspp -la bosnet.tcpip.obj**).

| Name | Fix Id | State | Description |
|-------------------------|---------|-----------|---------------------|
| ----- | | | |
| Path: /usr/lib/objrepos | | | |
| bosnet.tcpip.obj | | COMMITTED | TCPIP Applications |
| | U400011 | (U400012) | (Available on file) |
| | U400012 | COMMITTED | (Available on file) |
| | | | |
| Path: /etc/objrepos | | | |
| bosnet.tcpip.obj | | COMMITTED | TCPIP Applications |
| | U400011 | (U400012) | (Available on file) |
| | U400012 | COMMITTED | (Available on file) |

In the above example, the notation of having the fix ID U400012 listed in parentheses under the State field for the update U400011 means that update U400012 supersedes update U400011 for the **bosnet.tcpip.obj** product option. This means that update U400012 for **bosnet.tcpip.obj** contains all the fixes that are in update U400011 for **bosnet.tcpip.obj**.

The following output is an example of a list of the history information for the **bosnet.tcpip.obj** product option. It was obtained using the SMIT menu Show History of a Software Product with **bosnet.tcpip.obj** entered for the SOFTWARE name field on that menu (command **lspp -h bosnet.tcpip.obj**).

| Name | FixId | Release | Status | Action Date | Time | User Name |
|-------------------------|---------|-----------------|----------|-------------|-------------------|-----------|
| ----- | | | | | | |
| Path: /usr/lib/objrepos | | | | | | |
| bosnet.tcpip.obj | | | | | | |
| | | 03.02.0000.0000 | COMPLETE | COMMIT | 11/15/91 10:40:08 | root |
| | U400011 | 03.02.0000.0000 | | NONE | | |
| | U400012 | 03.02.0000.0000 | COMPLETE | COMMIT | 11/15/91 11:11:38 | root |
| | | | | | | |
| Path: /etc/objrepos | | | | | | |
| bos.tcpip.obj | | | | | | |
| | | 03.02.0000.0000 | COMPLETE | COMMIT | 11/15/91 10:40:09 | root |
| | U400011 | 03.02.0000.0000 | | NONE | | |
| | U400012 | 03.02.0000.0000 | COMPLETE | COMMIT | 11/15/91 11:11:38 | root |

Much of the output from the **lspp** command is understandable without an explanation. Other fields contain data that needs to be defined. The following paragraphs give a definition of terms used in several of the output fields.

Glossary

This section contains definitions of terms used in this *Installation Guide*.

A

active gateway. A gateway that is treated like a network interface in that it is expected to exchange routing information. If it does not do so for a period of time, the route associated with the gateway is deleted. See *gateway*. Contrast with *passive gateway*.

APAR. Authorized program analysis report. A report of a problem caused by a suspected defect in a current unaltered release of a program.

apply. When you apply a software product to the system, the product is installed and information is saved such that the product may later be removed from the system. The software is marked as being in the applied state. When you install a software product that is already installed, the current version of the product is removed from the system before the installation begins. The new version becomes the currently active version of the software. The active version is the version that will be run when you start running the product. Before you can reinstall a software product, the current version of the product must be in the *committed* state.

When you apply an update, the update is installed and the current version of that software product at the time of the installation is saved in a special save directory on the disk so that you can use the previous version of the software without having to reinstall it. When an update has been applied to a software product, that updated version of the product becomes the currently active version of the software.

Software that has been applied to the system can be committed or rejected. The **installp -s** command can be used to get a list of applied products and updates that are available to be either *committed* or *rejected*. Compare to *commit* and contrast with *reject*.

B

block size. (1) The number of data elements in a block. (2) A measure of the size of a block, usually specified in units such as records, words, computer words, or characters. (3) Synonymous with block length.

bootimage. A boot file created by the **bosboot** command from a Random Access Memory (RAM) disk file system and a kernel. The boot image varies for each type of device booted, and is usually compressed to fit on certain media and to lessen real memory requirements. The entire boot image may be compressed, which reduces the size of the bootimage file.

bootp. A part of the Carnegie Mellon code compatible with the Xstation AGE enhancements.

BOS Boot diskette. A diskette that contains the boot image needed to start your Base Operating System (BOS) from a diskette. It is one in a series of three diskettes necessary for installing your Base Operating System—Boot, Display, and Install/Maintenance.

C

CD-ROM. High-capacity, read-only memory in the form of an optically read compact disc.

child. (1) Pertains to a secured resource, either a file or library, that uses the user list of a parent resource. A child resource can have only one parent resource. In the operating system, a child is a process, started by a parent process, that shares the resources of the parent process. Contrast with *parent*. (2) In Enhanced X-Windows and AIXwindows, a first-level subwindow. A widget managed by another widget is said to be the child of the managing parent widget. For example, composite widgets typically manage the primitive children widgets attached to them. The parent widget typically controls the placement of the child as well as when and how it is mapped.

clean up. The clean up procedure instructs the system to attempt to remove software products that were partially installed. The system also attempts to revert to the previous version of the removed product. If the system successfully reverts to the previous version, it becomes the currently active version. If this cannot be done, then the software product is marked as broken. After the clean up procedure is complete, you can attempt to install the software again.

client. (1) In a distributed file system environment, a system that is dependent on a server to provide it with programs or access to programs. (2) In Enhanced X-Windows, an application program that connects to an Enhanced X-Windows server by an interprocess communication (IPC) path, such as a Transmission Control Protocol (TCP) connection or a shared memory buffer. The program can be referred to as the client of the server, but it is actually the IPC path itself. Programs with multiple paths open to the server are viewed as multiple clients by the protocol. (3) In Enhanced X-Windows, a Toolkit routine that uses a widget in an application or for composing another widget. (4) In AIXwindows, a software application that fills the role of the client in the traditional client-server model upon which Enhanced X-Windows and AIXwindows are based.

commit. When you commit software, you are making a commitment to that version of the software product. When you commit a product, the saved files from all previous versions of the software product are removed from the system, thereby making it impossible to return to a previous version of the software product. In SMIT, software can be committed at the time of installation by setting the COMMIT software? question to yes (or by using the **-ac** flags with the **installp** command). Note that committing already applied software does not change the currently active version of the software product. It merely removes saved files for the previous version of the software product.

For v3.1, updates could just be applied but software products were always committed when they were installed. Although v3.2 now allows a version 3.2 software product to be applied without committing it, the rejection of the installation level of the product will *not* have the same meaning as the rejection of updates to the product. Once you commit a new version of a product, you must reinstall the previous version if you want to use that version again. Compare to *apply* and contrast with *reject*.

corequisite. A product or update that must be installed concurrently with another specified product or update.

corrective service update. A temporary solution or bypass of a problem diagnosed as resulting from a defect in a current unaltered release of the program. Also called a PTF.

configure. To describe to a system the devices, optional features, and program products installed on a system.

Coordinated Universal Time (CUT). The new standard term for worldwide time-telling that has the same meaning as Greenwich Mean Time.

D

daemon. A program that runs in the background, unattended, to perform a standard service. Some daemons trigger automatically to perform their task and others operate on a timed or periodic basis.

dependent. A dependent software product is one that requires the specified product or update to be installed *before* it can be installed. In other words, the specified software product is a prerequisite to the dependent product. Contrast with *prerequisite*.

destination disk. The disk to which you are installing.

directory. (1) A type of file containing the names and controlling information for other files or other directories. (2) A table of identifiers and references to the corresponding items of data. (3) An index used by a control program to locate blocks of data that are stored in separate areas of a data set in direct access storage. (4) Contrast with *special file*. (5) A listing of related files arranged in a useful hierarchy.

diskless. A workstation without local file systems or local boot images that accesses some of its resources remotely. Diskless clients boot remotely from a diskless server and use the server for remote paging.

diskless community. A network of diskless workstations, servers, and clients.

display. A computer output screen on which visual information is displayed.

display device. See *display*.

display diskette. A diskette that contains the information needed to set up display devices—specifically, the TERM variables necessary for the system to recognize your display. It is one in a series of three diskettes necessary for installing your Base Operating System—Boot, Display, and Install/Maintenance.

domain. (1) That part of a network in which the data processing resources are under common control. (2) In a database, all the possible values of an attribute or a data element. (3) In TCP/IP, the naming system used in hierarchical networks. The domain naming system uses the DOMAIN protocol and the named daemon. In a domain system, groups of hosts are administered separately within a tree-structured hierarchy of domains and subdomains.

E

enhancement. A service update that when applied to your system provides the Base Operating System (**bos.obj**) or an optional software product with new or increased functionality.

environment. (1) The settings for shell variables and paths that are set when the user logs in. These variables can be modified later by the user. (2) A named collection of logical and physical resources used to support the performance of a function.

environment variable. (1) A variable that describes the operating environment of the process. Common environment variables describe the home directory, command search path, the terminal in use, and the current time zone (the HOME, PATH, TERM, and TZ variables, respectively). (2) A variable that is included in the current software environment and is therefore available to any called program that requests it.

F

file system. The collection of files and file management structures on a physical or logical mass storage device, such as a diskette or minidisk.

file tree. The complete directory and file structure of a particular node, starting at the root directory. A file tree contains all local and remote mounts performed on directories and files.

full network transfer. The loading of installation images for all of the software you select from the server to the client's hard disk.

full path name. The name of any directory or file expressed as a string of directories and files beginning with the root directory. See *path name* and *relative path name*.

G

gateway. (1) An entity that operates above the link layer and translates, when required, the interface and protocol used by one network into those used by another distinct network. (2) The network that connects hosts. See *active gateway*.

H

hard disk A rigid disk used in a hard disk drive. Synonymous with nonremovable disk.

Note: The term hard disk is also used loosely in the industry for boards and cartridges containing microchips or bubble memory that simulate the operations of a hard disk drive.

hardware. The physical equipment of computing and computer-directed activities. The physical components of a computer system. Contrast with *software*.

high function display device. See *high function terminal (HFT)*.

high function terminal (HFT). A virtual terminal device that, in addition to displays and keyboards, supports locations, valuations, lighted programmable keys, and sound generators.

host. (1) The primary or controlling computer in a communications network that has an Internet address. A host with multiple network interfaces may have multiple Internet addresses associated with it. (2) A computer attached to a network.

host name. The Internet address of a machine in the network. Also known as the host ID.

hypertext. A way of presenting information online with connections between one piece of information and another. These connections are called hypertext links. Thousands of these hypertext links enable you to explore additional or related information throughout the online documentation. See also *hypertext link*.

hypertext link. A connection between one piece of information and another. In the graphics interface, the link is displayed in a rectangular box. In the ASCII interface, it is displayed as underlined text. When you select one of these links, you are routed to a the target piece of information that then displays onscreen.

I

icon. A picture or graphical representation of an object on a display screen to which a user can point with a device such as a mouse in order to select a particular operation or perform a certain action.

input device. The device that is the source of the software you are installing. The input device can be a tape drive, diskette drive, or a directory.

installation image. An installation image contains a copy of the software you are installing in backup format, as well as copies of other files the system needs to install the software product.

install/maintenance diskette. A diskette that contains a subset of the system commands that are used to install systems and solve system problems. It is one in a series of three diskettes necessary for installing your Base Operating System—Boot, Display, and Install/Maintenance.

Internet (IP) address. The numbering system used in TCP/IP internetwork communications to specify a particular network or a particular host on that network with which to communicate. Internet addresses are commonly denoted in dotted decimal form.

initial program load (IPL) (1) The initialization procedure that causes an operating system to commence operation. (2) The process by which a configuration image is loaded into storage at the beginning of a work day or after a system malfunction. (3) The process of loading system programs and preparing a system to run jobs.

L

licensed program. (1) A software program that remains the property of the manufacturer, for which customers pay a license fee. (2) A separately priced program and its associated materials that bear a copyright and are offered to customers under the terms and conditions of a licensing agreement.

locale. A subset of a user's environment that defines conventions for a specified culture, such as time formatting, and character classification, conversion, and collation.

logical volume. A collection of physical partitions organized into logical partitions all contained in a single volume group. Logical volumes are expandable and can span several physical volumes in a volume group.

M

maintenance level update. The service updates (fixes and enhancements) that are necessary to upgrade the Base Operating System (**bos.obj**) Version 3.2 or an optional software product to the current release level.

monitor. (1) A device that observes and verifies operations of a data processing system. (2) A functional unit that observes and records selected activities for analysis within a data processing system. Possible uses are to show significant departures from the norm or to determine levels of utilization or particular functional units. (3) Synonym for *display*.

mount. To make a file system accessible.

mouse. A hand-held locator that a user operates by moving it on a flat surface. It allows the user to select objects and scroll the display screen by pressing buttons.

N

name server. A host that provides name resolution for a network. Name servers translate symbolic names assigned to networks and hosts into the efficient Internet addresses used by machines.

network adapter. Circuitry that allows devices to communicate with other devices on the network.

network mask. When a host sends a message to a destination, the system must determine whether the destination is on the same network as the source or if the destination can be reached directly through one of the local interfaces. The system compares the destination address to the host address using a subnet mask. By default, the mask for a Class C address is 255.255.255.0 (ffff00) which can support a maximum of 254 host addresses. The subnet mask used is 255.255.240.0 (ffff000) which divides into 14 different subnets and supports a maximum of 14 times 254 host addresses.

NFS. Network File System is a distributed file system that enables users to access files and directories located on remote computers and treat those files and directories as if they were local. NFS is independent of machine types, operating systems, and network architectures through the use of remote procedure calls (RPC).

O

optional software. Also referred to as *optional software product*. Software that is *not* automatically installed on your system when you install the Base Operating System (**bos.obj**) Version 3.2. Optional software can be *Version 3.2 software products*, such as the INed Editor and the DOS Server, which are packaged and sold with BOS. Optional software can also be *separately purchased software products*, such as AIXwindows and NetWare, which are specially ordered and not sold as part of BOS. In either case, BOS must be installed on your system before you can install optional software.

P

paging. (1) The action of transferring instructions, data, or both between real storage and external page storage. (2) Moving data between memory and a mass storage device as the data is needed.

partial network transfer. The loading of the Base Operating System (**bos.obj**), system messages (**bsmLanguage**), and network communications software (**bosnet**) installation images from the server to the client's hard disk.

passive gateway. A gateway that does not exchange routing information. Its routing information is contained indefinitely in the routing tables and is included in any routing information that is transmitted. Contrast with *active gateway*.

path name. A file name specifying all directories leading to the file. See *full path name* and *relative path name*.

physical volume. The portion of a single unit of storage accessible to a single read/write mechanism, for example, a drum, a disk pack, or part of a disk storage module.

PMP. A preventive maintenance package (PMP) is a maintenance level update for your system. A PMP includes updates for the Base Operating System and for each optional software product that is installed on your system.

PTF. A program temporary fix (PTF) is a temporary solution or bypass of a problem diagnosed as resulting from a defect in a current unaltered release of the program. It is also called a corrective service update.

preinstalled. Software that is installed by the manufacturer and ready to use.

prerequisite. A prerequisite can be a software product or a service update that must be installed *before* another software product or service update is installed. If you attempt to install software products or service updates without the required prerequisite software, a system message displays the names of required prerequisite software. Contrast with *dependent*.

primary console device. During the installation of the Base Operating System (BOS), the system console is the display device at the system on which you are installing the software.

primary language. The primary locale you want your system to use for screen information.

Q

quiescent (1) The process of bringing a device or a system to a halt by rejection of new requests for work. (2) In an ACF/VTAM application program, a way for one node to stop another node from sending synchronous-flow messages.

R

reboot. To reinitialize the execution of a program by repeating the initial program load (IPL) operation.

reject. When you reject an applied software product, the software product's files are removed from the system and the software vital product data (SWVPD) information is changed to indicate that the product has been removed from the system. System configuration information for the product is also cleaned up, but this is dependent on the product and may not always be complete. If a previous version, release, or level of the product was installed on the system, the system will not resume using the previous version. Contrast with *apply* and *commit*.

relative path name. The name of a directory or file expressed as a sequence of directories followed by a file name, beginning from the current directory. Relative path names do not begin with a / (slash) but are relative to the current directory.

release update package. A set of selective fixes, selective enhancements, and new versions of optional software products, since the last release of AIX. Also included is a maintenance level package for each software package.

root volume group. The set of hard disks containing the root portion of the Base Operating System file tree.

S

selective fix package. A service update that contains one or more subsystem selective fixes.

server. (1) An application program that usually runs in the background (daemon) and is controlled by the system program controller. (2) On a network, the computer that contains the data or provides the facilities to be accessed by other computers on the network. (3) A program that handles protocol, queuing, routing, and other tasks necessary for data transfer between devices in a computer system. (4) In Enhanced X-Windows, provides the basic windowing mechanism. It handles IPC connections from clients, de-multiplexes graphics requests onto screens, and multiplexes input back to clients.

server daemons. Daemons are processes that run continuously in the background and perform functions required by the processes. Server daemons accept connections from the clients and provide services to requested clients. Client is a simple process that connects to a server process. Several examples of server daemons are **ftpd**, **snmpd**, and **rlogind**.

service update. Software that either corrects a defect in or adds an enhancement to the Base Operating System (**bos.obj**) or an optional software product.

shared product object tree (SPOT). A file system that contains software that is to be shared among systems.

software. Programs, procedures, rules, and any associated documentation pertaining to the operation of a system. Contrast with *hardware*.

software product option. An installable unit of a software product. Since some software products are very large, they are divided into many separately installable options. Software product options are separately installable units that can operate independently from other options of that product. Some software product options can also be accessed independently from other options.

source. (1) A system, a program within a system, or a device that makes a request to a target. Contrast with *target*. (2) In advanced program-to-program communications, the system or program that starts jobs on another system.

special file. Used in the operating system to provide an interface to input/output devices. There is at least one special file for each device connected to the computer. Contrast with *directory* and *file*. See *block file* and *character special file*.

startup (boot) device. The device that assigns the hard disk within the root volume group that will contain the startup (boot) image.

subnet address mask. A bit mask used by a local system to determine whether a destination is on the same network as the source or if the destination can be reached directly through one of the local interfaces.

subnet mask. See *network mask*.

subsystem. (1) A secondary or subordinate system, usually capable of operating independently or synchronously with a controlling system. (2) The part of communications that handles the requirements of the remote system, isolating most system-dependent considerations from the application program.

subsystem selective fix. A service update that corrects specific problems a customer may be experiencing. The intent is to update the minimum amount of software to correct the problem.

superclient. A client that has read-write permissions on a shared product object tree (SPOT) which enables it to install optional software products.

T

target. A system, a program within a system, or a device that interprets, rejects, or satisfies, and replies to requests received from a source. Contrast with *source*.

TCP/IP. Transmission Control Protocol/Internet Protocol. A communications subsystem that allows you to set up local area and wide area networks.

TERM variable. The system name for the display device that you are using.

U

update. See *service update*.

upgrade. Software that fixes a defect in a previously released software product.

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